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Guidance for the Reregistration of Pesticide Products Containing Ethyl Parathion as the Active Ingredient

(U.S.) Environmental Protection Agency
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U.S. Department of Commerce
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GUIDANCE FOR THE REREGISTRATION OF PESTICIDE PRODUCTS

CONTAINING

PARATHION
(Ethyl Parathion)
SHAUGHNESSY No. 057501

DEC 15 1986

AS THE ACTIVE INGREDIENT
CAS No. 56-38-2

EPA CASE NUMBER 155

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDE PROGRAMS

WASHINGTON, D.C. 20460

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EPA Form 8580-	Formulator's Exemption Statement

I. INTRODUCTION

The Registration Standards Program

EPA has established the Registration Standards program to provide an orderly mechanism by which pesticide products containing the same active ingredient can be reviewed and standards set for compliance with FIFRA. The standards are applicable to reregistration and future applications for registration of products containing the same active ingredient. Each registrant of a product containing an active ingredient subject to this Standard who wishes to continue to sell or distribute that product must bring his product and labeling into compliance with FIFRA, as instructed by this Standard. Pesticides have been grouped into use clusters and will be reviewed on the basis of a ranking scheme giving higher priority to (1) pesticides in clusters used on food and feed crops; and (2) pesticides produced in large volumes.

The Registration Standards program involves a thorough review of the scientific data base underlying a pesticide's registration. The purpose of the Agency's review is to reassess the potential hazards arising from the currently registered uses of the pesticide; to determine the need for additional data on health and environmental effects; and to determine whether the pesticide meets the "no unreasonable adverse effects" criteria of FIFRA.

in its review EPA identifies:

1. Studies that are acceptable in fulfilling the data requirements for the currently registered uses of the pesticide.

2. Additional studies necessary to support continued registration. The additional studies may not have been required when the product was initially registered or may be needed to replace studies that are now considered inadequate.

3. Labeling revisions needed to ensure that the product is not misbranded and that the labeling is adequate to protect human health and the environment.

The detailed scientific review, which is not contained in this document, but is available upon request[1], focuses on the pesticide active ingredient. The scientific review primarily discusses the Agency's evaluation of and conclusions from available data in its files pertaining to the pesticide active ingredient. However, during the review of these data the Agency is also looking for potential hazards that may be associated with the end use products that contain the active ingredient. The Agency will apply the provisions of this Registration Standard to end use products if necessary to protect human health and the environment.

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[1] The scientific reviews are available upon request from the Information Services Section, Room 236, CM#2, 1921 Jefferson Davis Highway, Arlington, VA. 22202 (Tel.(703)557-4453). Ninety days after the issuance of the Standard, the reviews may be purchased from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

The Agency's reassessment results in the development its regulatory position which is contained in Section IV of this Standard. Based on this regulatory position, the Agency may prescribe a variety of steps to be taken by registrants to maintain their registrations in compliance with FIFRA. These steps may include:

1. Submission of data in support of product registration;
2. Modification of product labels;
3. Modifications to the manufacturing process of the pesticide to reduce the levels of impurities or contaminants;
4. Restriction of the use of the pesticide to certified applicators or other specially trained individuals;
5. Modification of uses or formulation types; or
6. Specification of packaging limitations.

Failure to comply with these requirements may result in the issuance of a Notice of Intent to Cancel or a Notice of Intent to Suspend (in the case of failure to submit data).

In addition, in cases in which hazards to human health or the environment are identified, the Agency may initiate a special review of the pesticide in accordance with 40 CFR Part 154 to examine in depth the risks and benefits of use of the pesticide. If the Agency determines that the risks of the pesticide's use outweigh its benefits, the Agency may propose additional regulatory actions, such as cancellation of uses which have been determined to cause unreasonable adverse effects on the environment.

The Agency anticipates initiating a Special Review of parathion because of concerns about acute human and acute avian toxicity. Registrants of parathion manufacturing-use products were notified by letter on May 16, 1986, pursuant to 40 CFR 154.21(a), that the Agency was considering initiating Special Review on parathion. The Agency plans to publish a Notice of Special Review and a Notice of Preliminary Determination pursuant to 40 CFR 154.34 within the next year. This notice will announce the the basis for the Agency's determination that the Special Review criteria outlined in 40 CFR 154.7 have been met, and will identify the Agency's proposed regulatory action to mitigate any unreasonable risk posed by the continued use of parathion.

EPA has authority under the Data Call-In (DCI) provisions of FIFRA sec. 3(c)(2)(B) to require that registrants submit data to answer questions regarding the chemical, toxicological, and environmental characteristics and fate of a pesticide. This Registration Standard lists the data EPA believes are necessary to resolve concerns about this pesticide. These data are listed in the Tables A, B, and C in Appendix I. Failure to comply with the DCI requirements enumerated in this Registration Standard may result in issuance by EPA of a Notice of Intent to Suspend the affected product registrations.

FIFRA sec. 6(a)(2) requires that registrants submit any information relating to adverse effects of a pesticide, including interim or preliminary results of studies, if test results suggest possible adverse effects on human health or the environment. This requirement remains in effect as long as the pesticide is registered.

II. CHEMICAL COVERED BY THIS STANDARD

A. DESCRIPTION OF CHEMICAL

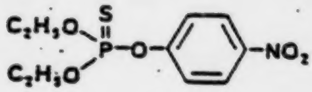
Parathion is the International Organization for Standardization (ISO), and the British Standards Institute (BSI) approved common name for an organophosphate insecticide produced solely in the United States by Monsanto Company. A technical product is registered, but not produced, in this country by Cheminova of Denmark.

The chemical name for parathion is O,O-diethyl-O-p-nitrophenyl-phosphorothioate. Other common names and trade names include: AC 3422, Alkron, Alleron, Aphamite, Bladan, Corothion, E-605, ENT 15108, Etilon, Ethyl Parathion, Folidol, E-605, Fosferno 50, Niran, Orthiphos, Panthion, Paramar, Paraphos, Parathene, Parawet, Phoskil, Rhodiatox, Soprathion, Stathion, and Thiophos.

Other identifying characteristics and codes are:

Empirical Formula:	$C_{10}H_{14}NO_5PS$
Molecular Weight:	291.26
CAS Registry No.:	56-38-2
ENT Registry No.:	15108
OPP Shaughnessy No.:	057501

Chemical Structure



Physiochemical properties of technical parathion include its dark brown color and its garlic-like odor. Technical parathion is a liquid with a boiling point of 157 to 162 C at 0.6 mm

Hg., and is miscible in some organic solvents such as carbon tetrachloride, chloroform, diacetone alcohol, ethyl acetate, pine oil, toluene, and xylene. This compound is only slightly soluble in water.

B. USE PROFILE

Parathion is an organophosphate insecticide. The organophosphate chemicals were developed as the result of the research of Schrader in Germany just prior to World War II. These compounds were intensively studied as chemical warfare agents (war gases), however, their development was not publicized until after the end of World War II.

Parathion was first registered in the United States by Monsanto Chemical Company in 1948. Due largely to its very high acute toxicity, regulations were issued in 1970 which prohibited parathion products from being sold in glass containers, and required the manufacturers of the chemical to supply safety instructions for the users. Placards were required to be placed in parathion treated fields and labeling requirements which included a limited number of graphic illustrations, were issued. In 1971, regulations were enacted requiring additional graphic illustrations on all parathion labeling such as the skull and crossbones in red on a contrasting background, and the graphic illustration of the precautionary statements, "Can kill you if breathed", "Can kill you by skin contact", and "Can kill you if swallowed." In 1974, Worker Protection Standards for Agricultural Pesticides (commonly referred to as Farm Worker Safety Regulations) were promulgated. However, these standards were not made clearly enforceable until the issuance in 1983 of PR Notice 83-2, which required that specific language be added to the labels for certain pesticides, including parathion. These standards required a 48-hour reentry interval for all parathion products, and specified that precautionary labeling be printed in both English and Spanish. Regulations classifying all parathion products as Restricted Use Pesticides were issued in 1978. Finally, in 1983, parathion was included in the RCRA Acutely Hazardous Waste list of chemicals.

Parathion products are registered for the control of over 200 pests and groups of pests such as ants, aphids, apple maggot, armyworm, boll weevil, bollworm, budworms, cankerworms, casebearers, cherry fruitworm, chinch bug, codling moth, corn earworm, corn rootworms, corn silk flies, crickets, cutworms, fruit flies, grasshoppers, greenbug, Harlequin bug, katydids, lace bugs, leafhoppers, leafminers, leafrollers, leaftiers, loopers, Lygus bugs, mealybugs, melonworm, mites, mosquitoes (adults and larvae), Oriental fruit moth, peachtree borer, pickleworm, plant bugs, plum curculio, psyllids, rednecked peanutworm, rindworms, sap beetles, sawflies, scale insects, shothole borer, seed chalcids, sorghum midge, spittlebugs, springtails, squash bugs, stink bugs, symphylans, tadpole shrimp, thrips, tomato pinworm, various boring insects, webworms, whiteflies, white grubs, and wireworms.

Parathion is registered for use on alfalfa, almonds, apples, apricots, artichokes, avocados, barley, beans, beets, blackberries, blackeyed peas, blueberries, boysenberries, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, celery, cherries, citrus fruits, clover, collards, corn, cotton, cranberries, cucumbers, currants, dates, dewberries, eggplant, endive (escarole), figs, filberts, garlic, gooseberries, grapes, grass (forage), hops, kale, kohlrabi, lettuce (field and greenhouse), loganberries, mangoes, melons, mustard greens, nectarines, oats, okra, olives, onions, peaches, peanuts, pears, peas, pecans, peppers, pineapple, plums, prunes, potatoes, pumpkins, quince, radishes, rape (seed crop), raspberries, rice, rutabaga, safflower, sorghum, soybeans, spinach, squash, strawberries, sugar beets, sugarcane, sunflower, sweet potatoes, Swiss chard, tobacco, tomatoes, turnips, vetch, walnuts, and wheat.

Parathion is also registered for use on various ornamental plants (field and/or greenhouse) including herbaceous and woody shrubs, trees, vines, flowering plants, nursery stock, Christmas tree plantations, and for larval and adult mosquito control.

The federal and state registrations for parathion include the following:

Section 3 registrations - 467 by 80 companies
Intrastate (40 CFR 162.17) registrations - 152 by 44 companies
Special Local Need Section 24(c) registrations - 38

Intrastate producers will be notified within two months from the date of issuance of this standard as to how they must comply with the labeling requirements imposed by the parathion Guidance Document.

The mode of parathion's pesticidal activity is by contact, ingestion, and vapor action. Parathion products are registered as emulsifiable concentrates, granulars, dusts, baits, wettable powders, and impregnated materials. Methods of application include ground (broadcast and band) and aerial.

III. AGENCY ASSESSMENT

A. SUMMARY

The Agency has reviewed parathion data in the areas of acute toxicity, subchronic and chronic toxicity, oncogenicity, reproductive effects, mutagenicity, plant and animal metabolism, environmental fate and exposure, and ecological effects. A summary of the Agency's review of the data for each of these areas is set forth below.

1. Acute toxicity

Parathion is extremely toxic to all forms of animal life and is classified in the highest possible toxicity category (category I). In general, the acute lethality of parathion is similar in all mammalian species and by all routes of exposure. Parathion acts by irreversible inhibition of cholinesterase and toxicity is secondary to this inhibition. Signs of acute intoxication are those typical of cholinergic poisoning. Toxic signs result from excessive stimulation at cholinergic junctions in the autonomic and central nervous systems. When a depolarization block occurs at the neuroeffector junctions as a result of excessive acetylcholine accumulation, death usually follows.

Table 1. Summary of Acute Toxicity Data.)

Animal species	Oral LD_{50} (mg/kg)	Dermal LD_{50}
male rat	7.6 (2.0-15.0)*	21.0
female rat	3.5 (1.75-6.0)	(6.8-10.9)
male mice	23.0 (17.5-30.3)	
female mice	12.7 (6.0-25.0)	
rabbit	68.0	
dog	(3.0-5.0)	
sheep	40.0 to 50.0	
Cattle		
lethal dose		
calves	1.5	
Man:		
adult	2.1**	
child	0.1**	

) From, Substitute Chemical Program; Initial Scientific and Mini-economic Review of Parathion; EPA-540/1-75-001; Jan. 1975

* ()= range

** This is not an LD_{50} but is instead the lowest lethal dose reported.

2. Subchronic toxicity

Subchronic studies in the dog (00071670) and the rat (00072409) show cholinesterase as the primary target for the toxic effect of parathion. Rats were dosed at 2.5, 25.0 and 75.0 ppm for 13 weeks. Plasma cholinesterase was inhibited at 25 and 75 ppm with a NOEL of 2.5 ppm in both sexes. Red blood cell (RBC) cholinesterase was inhibited at all doses in the females and at 25 and 75 ppm in the males with a NOEL of 2.5 ppm. Dogs were dosed at 0.3, 1.0 and 3.0 mg/kg/day. Plasma and RBC cholinesterase were inhibited at all doses.

Table 2. Summary of Subchronic Toxicity Data.

Study citation	Number of animals	Doses (ppm)/Number of Animal per Dose Group
00072409 (90 day rat feeding study)	80 male and 80 female Sprague-Dawley CD rats	0/40, 2.5/40, 25/40, 75/40
00071671 (90 day mouse feeding study)	60 male and 60 female Charles River CD-1 COBS 25-day old mice	0/30, 15/30, 50/30, 100/30
00071670 (90 day dog feeding study)	16 male and 16 female purebred beagle dogs	0/8, 0.3/8, 1.0/8, 3.0/8

3. Chronic toxicity

Chronic feeding studies in the rat (GS00155011) and the dog (00093896) show that parathion demonstrated adverse chronic effects such as retinal atrophy and degeneration, degeneration of the sciatic nerve, plasma cholinesterase inhibition, and RCB cholinesterase inhibition. Further discussion relating to these effects may be found in Section III. B. 3. of this document.

4. Oncogenicity

Three oncogenicity studies, one in the B6C3f^1 strain of mouse (GS00155012), one in Osborne Mendel rats (GS00155012), and one in Sprague-Dawley CD rats (GS00155011) were reviewed by the Agency. The mouse study (GS00155012) showed no indications of oncogenic effects, but the study was flawed and did not fulfill the requirements for an oncogenicity study. The Osborne Mendel rat study (GS00155012) showed a definitive malignant tumor response in adrenal cortical tumors, but like the mouse study was flawed and did not fulfill the requirements for an oncogenicity study. The Sprague-Dawley CD rat study (GS00155011) was a well conducted oncogenicity study and was determined to be negative for oncogenicity. Since the Sprague-Dawley rat study was adequate, the Agency is not requiring a repeat study in the Osborne Mendel rat. The Agency is, however, requiring that the mouse study be repeated.

Based on the results of these studies, the Agency carried out a weight-of-the-evidence analysis of parathion and established an interim classification for parathion as a Category C oncogen (possible human carcinogen) pending the receipt of additional data.

Further discussion relating to this effect may be found in Section III. B. 4. of this document.

5. Reproductive effects

The Agency has evaluated a two-generation rat reproduction study by Biodynamics (GS00155015). Rats were dosed at 0.5, 5.0 and 25.0 ppm. The study could not be properly evaluated because of omission of critical data. Those data omitted included: 1) individual animal data; 2) clinical observations of pups, weanlings, F_0 and F_1 adults; 3) histopathology of F_0 adults and 67% (10 of 15) of male and 33 % (10 of 30) of female F_1 mating adults as suggested by the Pesticide Assessment Guidelines, Subdivision F, Hazard Evaluation: Human and Domestic Animals; 4) premating individual animal data for body weights, body weight gain, food consumption and test substance intake and; 5) litter data for day 14 of lactation.

The lowest effect level (LEL) and NOEL values could not be assessed because of these critical omissions of data. Three of four pup parameters i.e., decreased pup viability in the high-dose F_2 pup and combined weighted average body weight gains for F_1 and F_2 pups during lactation were of equivocal biological significance and compound-related parental toxicity was not observed.

Table 3. Summary of Reproduction Data.

Study citation	Number of animals	Doses (ppm)/Number of Animal per Dose Group
GS00155015 (rat reproduction study)	60 male and 120 female Charles River CD rats	0/15m+30fe 0.5/15m+30fe 0.5/15m+30fe, 5.0/15m+30fe 25.0/15m+30fe

6. Teratogenicity

The Agency received teratogenicity data on the rat and rabbit in response to a Data Call-In Notice dated November 4, 1981. A review of these data showed that parathion was not teratogenic at levels up to 1.5 mg/kg in the rat, and 16 mg/kg in the rabbit. See Table 6 below for summary of teratogenicity data.

Table 4. Summary of Teratogenicity Data.

Study citation	Number of animals	Doses (ml/kg)/Number of Animal per Dose Group
GS00155013 (rat teratology study)	30 female Charles River rats (maternal toxicity)	0/5, 0.25/5, 0.5/5, 1.0/5, 2.0/5, 4.0/5
	72 female Charles River rats (fetal toxicity)	0.25/24, 1.0/24, 1.5/24
GS00155014 (rabbit teratology study)	25 female New Zealand white rabbits (maternal toxicity)	1.0/5, 5.0/5, 20/5, 40/5, 60/5
	54 female New Zealand white rabbits (fetal toxicity)	1.0/18, 4.0/18, 16/18

7. Mutagenicity

To assess the mutagenic potential of a chemical, the Agency requires a battery of tests to address three categories of possible genetic effects: 1) gene mutation, 2) structural chromosomal aberrations, and 3) other mutagenic mechanisms as appropriate. The Agency has evaluated six mutagenicity studies to date. Of these six studies, only one (under category 3 above), an unscheduled DNA synthesis (UDS) assay in human cell line WI-38 (GS00155010), was acceptable. This study was positive for induction of DNA repair and thus shows parathion as a potential mutagen. Additional mutagenicity testing in the other two categories is required before a conclusion can be reached for this effect.

8. Metabolism

The specific metabolism of parathion in both plants and animals has not been sufficiently determined. However, based on the knowledge of the structure-activity relationships of the organophosphate cholinesterase-inhibiting compounds, sufficient information is available to identify the chemical changes necessary for activation and deactivation of parathion. Parathion is activated by an oxidative desulfuration step that greatly enhances the anticholinesterase properties, and deactivated by a hydrolytic or oxidative cleavage that renders the molecule virtually inactive.

The oxidative desulfuration step of parathion yields paraoxon, an oxygen analog that is known to be much more acutely toxic than its parent compound. Various schemes have been postulated in the literature which detail the successive metabolic steps and depict the various active and inactive metabolites in both plants and animals. Further studies are necessary to both quantify and identify these compounds and determine whether or not they contribute to parathion's toxicity.

9. Environmental Fate and Exposure Assessment

a. Environmental Fate

The available data are insufficient to fully assess the environmental fate of parathion, including its ability to contaminate groundwater, and its persistence in the environment. Under normal conditions, parathion breaks down in the soil to form diethyl phosphoric acid, a harmless substance. Under arid conditions parathion oxidizes to form paraoxon.

b. Occupational Exposure

Numerous studies on worker exposure to parathion exist in the literature. A majority of these studies pre-date the current labeling requirement for protective clothing and therefore inadequately reflect the existing exposure patterns. A review of more recent poisoning incidents reported in the Pesticide Incident Monitoring System (PIMS) and through California's compulsory pesticide incidents reporting system indicates that acute systemic toxicity continues to be a serious problem for mixer/loaders, applicators, and fieldworkers in spite of extensive protective measures. To better understand this exposure to mixers/loaders, applicators, and fieldworkers, the Agency is requiring registrants to submit field residue data and worker exposure data, including biological monitoring studies for groundboom, aerial and airblast application techniques. In addition, this Registration Standard requires the submission of additional data regarding the permeability of protective clothing.

c. Dietary Exposure

A theoretical analysis based on worst-case assumptions suggests that there may be a risk from dietary exposure to parathion. Additional residue and toxicology data are needed to ascertain the extent of the risk from dietary exposure and to conduct a tolerance reassessment.

10. Ecological Effects

The Agency is extremely concerned about acute hazards to birds. Field investigations have documented bird deaths attributed to the ingestion of parathion-contaminated foliage and insects. Additionally, studies have shown reproductive effects. The Agency can not determine if parathion poses a risk to aquatic invertebrates or a chronic risk to fish because of insufficient field data.

11. Endangered Species

The Agency has evaluated the risk parathion poses to endangered species, based on jeopardy opinions prepared by the Department of Interior's Office of Endangered Species (OES) regarding parathion's use on certain crops, and biological opinions on other pesticides used on the same sites as parathion, and with similar use patterns. This analysis indicates that the use of parathion on certain crops may jeopardize certain endangered species. This Standard includes required endangered species labeling statements which govern the use of parathion in areas inhabited by endangered species (See Section D for specific endangered species labeling requirements).

11. Data Call-In Notices Issued:

The Agency has issued the following 3(c)(2)(B) Data Call-In Notices:

Date Issued	Data Required	Status
November 4, 1981 -	Chronic Feeding in one species	Data Submitted
	Teratogenicity in two species	Data Submitted
November 27, 1985 -	Sciatic nerve effects	Data Submitted
	Retinal degeneration	End of March 1987
	NOEL for cholinesterase inhibition in rats and dogs	Due Nov. 1987
	Review of data on follicular adenomas of the thyroid gland	Data Submitted
	Avian Monitoring Data	Due Jan. 1987

[3(c)(2)(B) Data Call-In Notices issued -- continued]

Date Issued	Data Required	Status
November 27, 1985	Reentry Data	Data Submitted
January 28, 1986	Residue Chemistry:	See below*
	Applicator Exposure Data	Due Jan. 1987

B. PRELIMINARY RISK ASSESSMENT

The Agency is concerned with the number of parathion poisoning incidents that have been reported in California, and believes that they reflect a nationwide problem. The Agency is also greatly concerned about the adverse acute toxicity of parathion to birds. As previously noted, the Agency plans to initiate a Special Review of parathion based upon these concerns.

1. Acute Human Toxicity Risks

Parathion is acutely toxic to humans through all routes of administration. It is classified in Toxicity Category I, the highest possible ranking for acute toxicity. The acute oral LD_{50} ranges from 1.75 - 15.0 mg/kg (see Table 1 on page 10 of this document for summary of acute toxicity data). Parathion causes irreversible acetyl cholinesterase inhibition; this effect accumulates with repeated exposure and can be fatal.

*These data requirements and their due dates are described more fully in Table A of the generic guidance data requirements. Except for "Chemical Identity" data which was included in the Data Call-In Notice by error, all of the residue chemistry data are to be submitted no later than July 28, 1988.

The Agency has evaluated all available poisoning incidence data and has concluded that parathion causes poisonings among all categories of workers who use or come into direct contact with the pesticide. This risk extends not only to mixer/loaders and applicators, but to fieldworkers and bystanders as well. In addition, these poisonings occur under the most stringent protective conditions and during use when in accordance with label directions. Little or no margin of safety exists for parathion use.

Parathion has a long history of poisonings. Analysis of parathion poisonings reported under the Agency's Pesticide Incidence Monitoring System (PIMS) shows that 648 people in the United States were poisoned between 1966 and 1980. Of these, there were 99 fatalities and 461 that required hospitalization. Since PIMS is a voluntary reporting system, it is suspected that more poisonings occur than are actually reported. The Agency recognizes that many of these poisoning incidents occurred prior to the implementation by EPA of improved labeling and packaging requirements beginning in 1971, and the classification of parathion as a restricted-use pesticide in 1978.

PIMS was discontinued because of lack of funding in 1980, so the Agency has relied upon the the occupational pesticide poisoning data from California for more recent parathion poisonings. This state maintains a mandatory reporting system for occupational-related illnesses and is, at present, the only reliable source for such information. The California poisoning incident data clearly show that parathion continues to pose a serious threat to applicators, mixer/loaders, and fieldworkers, despite the increased Federal restrictions on its use. Moreover, poisonings have continued to occur in spite of California's stricter control measures and restrictions which were put into effect in 1979. These measures include reentry intervals which range from 2 to 75 days depending on the crop, the usage rate, liquid volume applied, occurrence of rainfall after application, and the county where the pesticide is used. The State also requires that employees use closed mixing/loading systems when working with liquid formulations of Toxicity Category I pesticides. The California data indicate that these restrictive measures have reduced the total number of poisonings, but a significant number of poisonings continues to occur. Between the periods of 1976-1978 and 1979-1981, poisonings of aerial applicators, mixer/loaders, and fieldworkers have declined. However, there has been no apparent decline in ground applicator poisonings. Table 7 lists the number of reported parathion poisoning incidents among different job categories in California from 1976 through 1981.

Table 5. Illness Due to Parathion Exposure Reported by Job Category for the Period 1976 through 1978 and the Period 1979 through 1981.

SYSTEMIC ILLNESS	FOR PERIOD 1976-1978	FOR PERIOD 1979-1981	TOTAL FOR SIX YEAR PERIOD
Ground Applicator	19	18	37
Aerial Applicator	2	0	2
Mixer/Loader	23	9	32
Field Worker	28	6	34
Drift	5	3	8
Warehouse/Transportation	12	3	15
Manufacturing/Formulation	4	0	4
All Other	26	14	40
Total	119	53	172

The California data also indicate that workers are being poisoned despite the use of protective clothing and adherence to label directions. An analysis of 100 parathion poisonings in California from 1975 to 1981 shows that more than fifty percent of the cases occurred while the workers were allegedly wearing the required protective clothing and equipment. Poisoning incidence data also indicate that parathion spray drift may cause adverse effects to non-target populations. Additional exposure data are required in order to conduct a spray drift risk assessment.

Parathion is among the top five pesticides in California in terms of frequency of poisonings, number of hospitalizations from poisonings, and in number of days of required hospitalization because of occupational exposure to pesticides (See Table 8 below). Parathion is also the most extensively regulated pesticide among the top five. Further, between 1981 and 1985 parathion accounted for an average of 7.5 poisonings per million pounds of active ingredient sold in California. The baseline average for poisonings per million pounds of active ingredient sold in California for all pesticides was 1.3.

Table 6. Summary Data on Major Causes of Occupational Pesticide Poisoning in California, 1981 - 1985

Top 5 Pesticides by Numbers of Systemic Poisonings		Top 5 Pesticides by Number of Individuals Hospitalized		Top 5 Pesticides by Number of Days of Hospitalization	
1. Diazinon	144	1. Mevinphos	22	1. Methyl Bromide	191[1/]
2. Mevinphos	135	2. Methyl Bromide	20	2. Parathion	71
3. Parathion	100	3. Parathion	17	3. Malathion	56
4. Malathion	100	4. Methomyl	17	4. Mevinphos	47
5. Chlorpyrifos	89	5. Diazinon	13	5. Diazinon	38

[1/] A single individual accounted for 120 of the 191 days.

California is considered to have this nations most stringent parathion safety regulations. Texas is the only other state that has adopted measures more stringent than the existing Federal requirements. Consequently, the Agency believes that a vast number of poisoning incidents in the rest of the United States, where only Federally-mandated restrictions are in place, although not reported, could be more serious and more frequent than those reported in California.

EPA requests additional data from the public on pesticide poisoning incidents attributable to parathion. This information may consist of, but is not limited to, reports of poisoning incidents in the possession of registrants, or which may be known to the public. In providing such data, commenters should include the following specific information if known: (1) the date and location of the incident; (2) the type of activity involved (e.g., application, mixing/loading, and harvesting); (3) the type of protective clothing and equipment, if any, worn or in use when the incident occurred; (4) the number of persons affected; (5) the type and extent of injury sustained, including symptomology, chlolinesterase levels, and treatment; (6) the crop treated; (7) the application rate; and (8) the state or local control measures in effect at the time the incident occurred (e.g., length of reentry interval, and protective clothing and equipment requirements).

2. Ecological Concerns

The Agency has obtained sufficient documentation from both laboratory data and from field investigations to be deeply concerned about the toxic effects of parathion to birds. Direct avian mortality from the consumption of parathion-contaminated foliage and insects has been established by field investigations. Further, there is evidence that exposure to parathion residues impairs the reproductive success of bird colonies inhabiting areas in the vicinity of parathion treated fields.

The Agency has also evaluated the effects of parathion on aquatic organisms and mammals. Although the theoretical risk estimates appear to indicate that parathion may pose a risk to these species, a Special Review is not being initated because the Agency lacks field data to document this risk. Submission of these data are being required in this standard.

a. Avian Risks

Short-term laboratory testing with birds indicates that parathion is highly toxic to avian species. The LD_{50} values ranged from 1.3 mg/kg for house sparrows and common pigeons, to 24 mg/kg for Chukars. Eight-day dietary LC_{50}'s ranged from 76 to 336 ppm for the mallard and ringnecked pheasant, respectively. Avian chronic data are lacking.

Based upon a review of the typical residues occurring on crops immediately after application, an extrapolation of the residues on avian food items was obtained. These residue levels, when compared to laboratory LC_{50} and LD_{50} values, occur at concentrations high enough to kill birds.

The Agency believes that a large number of avian mortalities are not reported because of the human hazard involved in entering treated fields. In order to accurately document bird kills, field investigators need to be on site either when the pesticide is applied or immediately after it is applied. Because of parathion's high acute toxicity, field investigators are reluctant to enter treated fields in a timely manner to search for dead birds. In addition, the protective clothing required with the reentry interval imposes a practical limitation since this equipment is often not available to field investigators. This delay also severely reduces the ability to find dead birds since scavenging animals are likely to remove the dead birds before they can be counted. In addition, there are no federal laws which require the reporting and investigation of pesticide related wildlife incidents.

There have been 14 reported incidents of bird kills between 1956 and 1985 in or near wheat, cotton, and alfalfa fields that were treated previously with parathion (refer to Table 7). The number of waterfowl and shorebirds killed in each of these cases ranged from 30 to 1600.

Recent studies show a marked decline in reproduction rates among shorebirds nesting in the vicinity of cotton fields treated with parathion. Because the use of this pesticide coincides with the nesting and chick stages of birds such as the gull and tern, repeated yearly exposure could seriously threaten these populations. In a recent report, twenty-five percent of an immature population of laughing gulls died from parathion treatment of nearby fields. The deaths were caused by direct ingestion of parathion or indirectly from exposure or starvation due to the deaths of their parents. As a result, a reproductive success rate of only 0.7 fledglings per nest occurred. This rate is substantially below the estimated rate of 1.4 fledglings per nest that is required in South Texas to maintain a stable population. Additional studies have shown that laughing gulls exposed to sublethal dosages of parathion spend significantly less time incubating their eggs. This may also tend to lower reproductive rates since the absence of parents from the nests reduces hatching success and allows for greater egg predation. Both federal and state field biologists have reported bird mortalities and reproductive effects resulting from birds feeding in parathiontreated grain sorghum (milo), sunflower, corn, and peanut fields, and in orchards. For instance, the Oklahoma Department of Wildlife Conservation has documented avian losses in wheat and alfalfa fields which were treated with parathion. The Kansas Fish and Game Commission has reported pheasant losses in parathion-treated sorghum, sunflower and corn fields, and the California Department of Fish and Game has reported poisonings of red-tailed hawks in dormant orchards. The U.S. Fish and Wildlife Service is investigating reproductive impairment in gull colonies located near inland bodies of water in Idaho that were previously treated with parathion. They are also attempting to ascertain the avian hazards resulting from the use of granular parathion products in Georgia peanut fields.

Table 7. Bird Kills Caused by Parathion Application to Wheat, Cotton and Alfalfa Fields

Date of Kill	State	Number and Kind of Birds Killed	Nature of Incident
Not reported	Not reported	649 chickens.	Drift from aerial application to wheat field reached chicken house (0.4 miles). (PIMS)
*4/56	Porter, Oklahoma	50 snow geese	Nearby wheat and alfalfa fields treated with parathion.
3/67	Garber, Oklahoma	50 to 100 snow geese.	Stomach contents contained parathion residues. (wheat)
2/27/76	California	35 Canada geese.	Alfalfa sprayed 48 hours previously with parathion. Alfalfa present in GI tract and parathion residues detected in GI tract contents.
*3/1/76	Kay County Oklahoma	5 tame ducks, 2 geese, ? hawks, and ? songbirds.	Winter wheat treated with parathion
10/11/77	Oklahoma	100 to 150 geese (Canada, snow and white-fronted)	Wheat field on wildlife refuge sprayed with parathion. (Massive greenbug outbreak). Presence of parathion confirmed by lab analysis.
6/27-28/78	Texas	116 chicks and several adult laughing gulls were found dead on nesting islands. Concurrently over 100 dead adults were found in or near parathion treated cotton fields 3 miles from the nesting colony.	Cotton fields treated with parathion. ChE was inhibited in dead adults and some dead chicks. Parathion detected in GI tract of adults and some chicks. Approximately 25% of the immature population died either directly or indirectly from parathion.
6/79	Texas	A large number of chicks of varying ages died over a period of several weeks. The ChE inhibition data indicated that OP pesticides were implicated.	Cotton fields treated with parathion and EPN.

*Parathion residues in carcasses not measured

(Continued on next page)

Table 7.(con't) Bird Kills Caused by Parathion Application to Wheat, Cotton and Alfalfa Field

Date of Kill	State	Number and Kind of Birds Killed	Nature of Incident
*6/20/80	Logan County, Oklahoma	8 ducks, 6 turkeys, 12 pheasants, and 1 chicken.	Aerial application of parathion to wheat.
12/80	Etter, Texas	500 Canada geese.	Parathion and methyl parathion detected in pooled ingesta. (wheat)
1/26/81	Etter, Texas	1600 waterfowl (1480 Canada geese, 20 white-fronted geese, 75 mallards, 25 pintails).	Wheat field sprayed with a 2:1 mixture of parathion: methyl parathion 2 days earlier. GI tracts were packed with wheat containing residues in the ratio 2:1 parathion:methyl parathion. ChE inhibition in dead birds. Heavy greenbug infestation. Parathion and methyl parathion detected in GI tract of dead birds.
2/24-25/81	Sherman, Texas	72 geese (60 Canadas, 4 white-fronted, 6 snow and 2 Ross).	Wheat fields near wildlife refuge were sprayed with parathion on 2/18. GI tracts were packed with wheat containing parathion residues. Widespread greenbug infestation ChE inhibition.
3/13/81	Kiowa County, Oklahoma	132 geese (38 Canada and 94 white-fronted) and 1 gadwall duck around lake. One sick red-tailed hawk was seen in field.	Wheat field sprayed 1 week earlier with parathion. Residues detected in geese. Eagles were feeding on dead geese.
3/15/81	Comanche and Caddo Counties, Oklahoma	Over 30 geese.	Wheat field treated with parathion. Parathion residues detected in geese.
*4/2/85	Stevens County, Oklahoma	155 widgeons, and 10 Canada geese. Dead birds were found in alfalfa field and along edge of lake.	Nearby alfalfa and wheat fields treated with parathion for greenbugs.

*Parathion residues in carcasses not measured

b. Aquatic Organisms and Mammals

i. Aquatic Invertebrates

Field data are inconclusive concerning parathion's effect on aquatic invertebrate populations in natural waters. In one field study (GS0155019) a 40 acre peach orchard was treated with 0.6 pounds of parathion per acre per application. The orchard was treated every 2 weeks throughout the growing season (April through August). Parathion residue levels in a pond adjacent to the treated area were measured periodically throughout the growing season. The principal source of the parathion residues in the pond water was believed to be spray drift during application.

The study attributed the decline in aquatic invertebrate populations to the decline of adult insect populations in treated surface areas rather than to parathion residue levels in the water. The parathion residue levels in the water ranged from 0.02 to 1.22 ppb over the course of the growing season. These levels are within the range of the 96-hour LC_{50} values for aquatic invertebrates, which range from 0.04 to 2130 parts per billion (ppb). In addition, chronic effects in invertebrates have been noted at 0.04 ppb and higher. It therefore remains uncertain whether parathion residue levels in natural water can affect aquatic invertebrate populations.

ii. Aquatic Vertebrates

a. Freshwater Fish

The available data do not suggest that parathion, if properly used, poses a problem concerning fish populations. The field study referenced above did not adequately monitor for effects in fish. However, the parathion residues in the pond water were well below levels known to poison to fish. The reported 96-hour LC_{50}'s for freshwater species range from 0.32 to 2.65 ppm. Reports of fish kills that may implicate parathion as a possible causative agent are inconclusive because more than one pesticide is frequently involved, and, unlike avian mortality reports, parathion residue data are generally not available.

Since the residue levels in the field study mentioned above were within the range of exposures that have been shown to cause chronic fish effects in the laboratory, the Agency can assume that a chronic risk exists. Chronic testing has demonstrated vertebral damage and other gross morphological lesions at concentrations of 0.34 ppb in bluegill, and reproductive impairment in fathead minnows at concentrations of 9 ppb. The absence of environmental fate data concerning the persistence of parathion residues in natural water also precludes a determination of the risk.

b. Marine and estuarine organisms

In laboratory tests, parathion is highly toxic to marine and estuarine organisms. The 96-hour LC_{50} for striped bass was determined to be 17.8 -36ppb. The 48-hour LC_{50}'s for the sheepshead minnow and brown shrimp were 60 ppb and 1 ppb, respectively. No chronic test results are available. The Agency lacks field data to substantiate the risk to marine and estuarine organisms. Therefore, the Agency is requiring parathion monitoring and field testing data. Acute and chronic data on marine and estuarine organisms are also required. These data requirements are set forth in Table A-Generic Data Requirements.

iii. Mammals

Mammals appear to be somewhat less sensitive to parathion than birds. The reported bird LD_{50} values ranged from 1.0 - 24.0 mg/kg with a median value of 2.5 mg/kg. The reported LD_{50} values for mule deer and domestic goat, however, are 22-44 and 28-56 mg/kg, respectively. Other reported LD_{50} and LC_{50} values are 49-96 mg/kg, and 192-699 ppm for microtine rodents (voles); and 126-130 ppm for albina rats.

The Agency has estimated the parathion residues on mammalian food items based upon a review of the typical residues occurring on crops immediately after application. These residue levels, when compared to laboratory LC_{50} and LD_{50} values, indicate that mammals generally will not be affected by ingesting parathion-treated vegetation. Therefore, the Agency does not believe that there is a significant risk to mammals. Mammals that commonly inhabit agricultural areas such as ground squirrels, rabbits and deer would not be exposed to lethal amounts of parathion. Furthermore, dead mammals are not usually found by field investigators in parathion treated fields.

3. Chronic Toxicity Risks

The Special Review is not focusing on chronic effects to humans because there are insufficient data concerning the occurrence of these effects at low doses; the Agency lacks sufficient exposure data to determine a risk from chronic effects; and, based on the available data, acute toxicity is the toxicological effect of most concern.

Nonetheless, the Agency is concerned about the chronic effects discussed below. These data have been requested through earlier Data Call-In Notices and additional data are being required through this Registration Standard. The Agency will assess the risk from chronic effects through all routes of exposure upon receipt of the requested data.

a. Plasma Cholinesterase Inhibition and RBC Cholinesterase Inhibition

Two chronic feeding studies, one in the rat (GS00155011) and one in the dog (00093896), show cholinesterase as the primary target for the toxic action of parathion. Rats were dosed at 0.5, 5.0 and 50 ppm. Plasma cholinesterase was inhibited in both sexes at 5.0 ppm with a NOEL of 0.5 ppm. Contrary to the subchronic study, no evidence of RBC cholinesterase inhibition was observed in either sex. This may be because the first cholinesterase determination was taken at six months in the chronic study while the determination in the subchronic study was made at three months. This indicates a possible compensatory mechanism following prolonged exposure. An additional subchronic study is needed to solve this anomaly and determine a NOEL for RBC cholinesterase inhibition in the female rat.

Dogs were dosed at 0.01, 0.03 and 0.10 mg/kg/day for one year. RBC cholinesterase inhibition was observed in both sexes at 0.03 mg/kg/day with a NOEL of 0.01 mg/kg/day. Plasma cholinesterase inhibition was observed in both sexes at all doses.

Table 8. Summary of Chronic Toxicity Data.

Study citation	Number of animals	Doses (ppm)/Number of Animal per Dose Group
GS00155011 (2-year rat chronic feeding and oncogenicity study)	240 male and 240 female Sprague-Dawley CD (SD) BR rats	0/60, 0.5/60, 5.0/60, 50.0/60
00093896 (1-year dog feeding study)	32 male and 32 female beagle dogs	0/8, 0.01/8, 0.03/8, 0.10/8

b. Ocular Effects

The 2-year rat chronic/oncogenicity feeding study (GS00155011) also demonstrated uni- and bilateral retinal degeneration in the females in the high dose group (50ppm). Eye effects were inhibition was observed in either sex. This may be due to the observed by direct opthalmological and histopathological examination. A no-observed effect level (NOEL) for this effect was considered by the authors of the study to be the middle dose level (5 ppm). However, the Agency is concerned that functional impairment of the eye could occur at lower dose levels. The Agency has required additional data to address these concerns.

The Agency's concern that parathion is capable of producing a broad spectrum of eye effects at all dose levels is supported by organophosphate pesticide poisoning incidents in Japan during the early 1950's and 1960's. Many Japanese field-workers were exposed to a range of organphosphate pesticides which may have included parathion. The eye effects ranged from myopia, which could not be corrected optically, to congestion or degeneration of the optic nerve. These myopic effects were later duplicated in studies of organophosphate pesticides in dogs. Also, studies in rats with fenthion, an insecticide structurally related to parathion, have shown a progression of effects from functional abnormalities in electrical activity at low acute doses to retinal degeneration following acute exposure at higher doses or chronic exposure.

Although these data are suggestive, they are not derived from parathion-specific data. Before the Agency can assess the chronic risk to workers, additional human exposure and laboratory animal eye effects data are needed.

c. Sciatic Nerve Effects

In the same rat chronic feeding study cited above (GS00155011), observation of abnormal gait in the hind limbs of the females prompted special histopathological examinations of the sciatic nerves in animals which were tested at the high dose level (50 ppm). These examinations showed compound-related toxicity. Hemotoxylin and Eosin sections from male rats showed loss of myelinated fibers with increased perivascular myelin debris and Schwann cell proliferation. Microscopic sections showed increased degenerative changes characterized as cholesterol clifts, myelin ovoids, myelin sheath ballooning, loss of myelinated fibers and Schwann cell proliferation. The teased nerve fiber preparation showed significant degenerative differences between control and test animals at the high dose in both sexes.

The special histopathological examinations were not performed on the test animals which received low and intermediate doses. A NOEL for these sciatic nerve effects consequently was not established. The Agency has required additional data through a Data Call-In Notice in order to determine the NOEL for these effects. In addition, worker exposure data have been required to enable the Agency to determine the risk to workers.

4. Oncogenicity Risks

The Agency has carried out a weight-of-the-evidence analysis of parathion and has established an interim classification of parathion as a Category C oncogen (possible human carcinogen). This judgment is based primarily on results from three oncogenicity studies which are briefly summarized below.

A feeding study sponsored by the National Cancer Institute (NCI) using the B6C3f^{1}strain of mouse (GS00155012) showed no indications of oncogenic effects. However, this study is considered supplementary and does not fulfill the regulatory requirements for an oncogenicity study for the following reasons: 1) the concurrent control contained only 10 mice per sex; 2) some tissues were not examined microscopically; 3) some male mice were dosed only for 62 weeks instead of the usual 80 weeks; and 4) a lab audit of the study indicated significant Good Laboratory Practice (GLP) violations by the testing laboratory Gulf South Research Institute (GSR).

In a well-conducted feeding study sponsored by Monsanto, and carried out by Biodynamics, no oncogenic effects were observed in Sprague-Dawley CD rats (GS00155011). The initial review indicated an increased incidence of follicular adenomas of the thyroid gland in the high dose males (five of 58 with follicular adenomas in the 50 ppm group compared to one of 59 in the control group). Upon reanalysis of the data [1) a re-reading of the slides showed one less high dose tumor and no accompanying hyperplasia and 2) historical controls showed the high dose effect to be within the historical control range], the Agency determined that the study was negative for oncogenicity.

A study by the National Cancer Institute on Osborne Mendel rats (GS00155012) showed a definitive malignant tumor response in adrenal cortical tumors (adenomas plus carcinomas) in both low- and high-dose males and in high-dose females. Tumor rates were significantly elevated in both male and female high-dose groups when compared to either matched or pooled controls. Tumor rates were significantly elevated in the male low-dose group when compared to pooled controls. These tumor rates were well above (six to eight times) the average incidence of historical controls for this strain. In addition, marginal responses were seen for two other tumor types among males: significant trends for thyroid follicular cell adenomas and pancreatic cell carcinomas when dosed groups are compared with pooled (but not matched) controls. Like the mouse study, this study was flawed in that 1) only 10 rats/sex were used in the control group, 2) the test material was fed to rats for only 80 weeks of the 112 week study, and 3) a lab audit of the study indicated Good Laboratory Practice (GLP) violations by the conducting laboratory (GSR).

Tests for point mutations, numerical and structural chromosome aberrations, DNA damage/repair, and in vitro transformation provide supportive evidence of carcinogenicity and may give information on potential carcinogenic mechanisms. A range of tests from each of the above end points helps to characterize an agent's response spectrum. Therefore, in reaching the weight-of-evidence conclusion for parathion, other information used by the Agency was a positive result for DNA repair in human WI-38 cells in an acceptable test, (several other mutagenicity tests were unacceptable but negative), and the possibility of metabolism to p-nitrophenol, which belongs to a class of chemicals that are associated with mutagenic and/or oncogenic activity.

Based upon results of these studies, the Agency has established an interim classification of parathion as a Group C (possible human carcinogen) pending the receipt of additional data. The Group C classification may be used to classify chemical agents when there are design deficiencies in animal studies which suggest a carcinogenic response. As explained in the Agency's Proposed Guidelines for Carcinogenic Risk Assessment, 49 F.R. 46294 (Nov. 23, 1984), Group C is used for agents with limited evidence of carcinogenicity in animals in the absence of human data.[2] "Limited evidence of carcinogenicity" is defined in the Proposed Guidelines as meaning "that the data suggest a carcinogenic effect but are limited because: (a) The studies involve a single species, strain, or experiment; or (b) the experiments are restricted by inadequate dosage levels, inadequate duration of exposure to the agent, inadequate period of follow-up, poor suvival, too few animals, or inadequate reporting; or (c) an increase in the incidence of benign tumors only." 49 F.R. 46294, 46300.

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[2] These guidelines recommend a system for stratifying the cation system developed by the International Agency for Research on Cancer (IARC, 1982). In the IARC classification method, the evidence that an agaent produces cancer in humans is divided into three categories: sufficient, limited, and inadequate.

Parathion produced a definite tumor response at one site and marginal tumor responses at two sites in an inadequately designed study. The weight-of-evidence does not meet any of the criteria for "sufficient evidence" provided in the Agency's Proposed Guidelines for Carcinogenic Risk Assessment cited above. However, it is the Agency's opinion that the substantial increase in adrenal tumor rates in both the male and female Osborne-Mendel rats does provide limited evidence of oncogenicity in animals despite the flaws in the study and the existence of a (well-conducted) negative test in another strain of rat.

Because of the deficiencies in both of the NCI studies mentioned above, the Agency is requiring that the mouse study be repeated. An adequate study in a second species will establish a firmer basis for final oncogenic classification of parathion.

Because an adequate rat oncogenicity study in another strain is available, the Agency is not requiring a repeat study in the Osborne Mendel rat. However, such a study could provide a firmer basis for evaluating the oncogenicity in the rat, and, if submitted, would be considered along with the required mouse study in future evaluations of parathion oncogenicity.

Table 4. Summary of Oncogenicity Data.

Study citation	Number of animals	Doses (ppm)/Number of Animal per Dose Group	
GS00155011 (2-year rat chronic feeding and oncogenicity study)	240 male and 240 female Sprague-Dawley CD (SD) BR rats	0/60, 0.5/60, 5.0/60, 50.0/60	
GS00155012 (2-year rat oncogenicity study)	150 male and 150 female Osborne Mendel rats	male 0/10 32/50 63/50	female 0/10 23/50 45/50
GS00155012 (2-year mouse chronic feeding and oncogenicity study)	150 male and 150 female $B6C3F_1$ mice	male 0/10 80/50 160/50	female 0/10 80/50 160/50

C. TOLERANCE REASSESSMENT

1. Residue Data

Tolerances have been established for residues of parathion and its methyl homolog in a variety of raw agricultural commodities (40 CFR 180.121). The majority of crop tolerances for parathion were established by the Pesticide Spray Residue Hearings in the 1950s and are based on estimates of what residues would likely be present following pesticide treatment of the crop rather than on actual scientific crop residue data. In addition, the tolerance expression included both the methyl and ethyl homologs of parathion because these homologs were not distinguishable by the analytical methodology (colorimetric) available at that time. However, current gas chromatographic analytical methods are capable of distinguishing between these two compounds and, therefore, the Agency is now requiring separate tolerances. Furthermore, the Agency is also requiring that parathion tolerances be expressed in terms of the parent compound and any identified major metabolites. The existing tolerances do not take into consideration the metabolites of the parent compound.

Crop residue data and plant and animal metabolism data have been previously required in a Data Call-In Notice (January 28, 1986). Once the Agency has received and reviewed these data, it will determine if additional tolerances for animal products (meat, milk, and eggs) are required.

As indicated in Table A, crop group tolerances are not appropriate at the present time since additional key residue data are needed for representative members in each crop group.

2. Toxicology Data

The current Acceptable Daily Intake (ADI) of 0.005 mg/kg/day was set at the "Joint Meeting of the Food and Agriculture Organization (FAO) Committee on Pesticides in Agriculture" and the "World Health Organization (WHO) Expert Committee on Pesticide Residues (FAO/WHO)" in 1968 on the basis of a NOEL of 1.0 ppm or 0.05 mg/kg/day for cholinesterase inhibition and using a 10-fold safety factor. The Theoretical Maximum Residue Contribution (TMRC) is approximately 0.59 mg/day, and currently utilizes

192 percent of the ADI for the general population, based on established tolerances. However, for infants and children up to 12 years of age this ratio is between 291 and 575 percent.

This assessment may greatly exaggerate dietary exposure. The assessment is based on several worst-case assumptions: that parathion residues are equal to established tolerance levels, that 100 percent of the crop is treated with parathion, and that there is no degradation of residues after harvesting. It has been the Agency's experience that pesticide residue levels on crops are usually below established tolerances. In addition, much less than 100 percent of registered crops are treated with parathion, and, in fact, very little parathion is used on most of the crops that contribute significantly to the TMRC.
Before the Agency can assess parathion's risk from dietary exposure, additional toxicological data are needed. Data from new chronic feeding studies in rats and dogs suggest that a new, lower NOEL may need to be established based on either cholinesterase effects or systemic effects, whichever occurs at a lower level. The Agency has required additional data, through a Data Call-In Notice dated November 27, 1985, to determine a new NOEL for cholinesterase inhibition in the dog and eye toxicity based on possible functional retinal impairment in the dog and rat. Data on sciatic nerve degeneration in the rat must also be provided.

3. Conclusion

Because of the substantial residue chemistry and toxicology data gaps, the Agency is unable to conduct a tolerance reassessment at this time. However, since the TMRC currently exceeds 100% of the ADI and because of the Agency's inability to determine the level of incremental risk because it lacks sufficient data, no new food uses or tolerances will be permitted. Registrants are encouraged to reduce this percentage by voluntarily cancelling uses or withdrawing tolerances (especially those with no registered uses - see Table 10, U.S., Mexican and Codex tolerances).

Table 10. Summary of Present Parathion Tolerances

Commodity	Tolerances (ppm)			(MRL)
	United States[a/]	Canada[a/]	Mexico[a/]	International (Codex)[b]
Garden Beets	1.0	0.7	---	0.7
Carrots	1.0	0.7	---	---
*Parsnips	1.0	0.7	---	0.7
Potatoes	0.1	---	0.1	0.7
Radishes	1.0	0.7	1.0	0.7
Rutabagas	1.0	---	---	0.7
Sugar Beets	0.1	---	---	---
Sweet Potatoes	0.1	---	0.1	0.7
Turnips	1.0	0.7	---	0.7
Garlic	1.0	---	1.0	0.7
Onions	1.0	0.7	1.0	0.7
Celery	1.0	0.7	1.0	0.7
Endive	1.0	0.7	---	0.7
Lettuce	1.0	0.7	1.0	0.7
Spinach	1.0	0.7	1.0	0.7
Swiss Chard	1.0	0.7	---	0.7
Broccoli	1.0	0.7	1.0	0.7
Brussels Sprouts	1.0	0.7	---	0.7
Cabbage	1.0	0.7	---	0.7
Cauliflower	1.0	0.7	---	0.7
Collards	1.0	---	---	0.7
Kale	1.0	0.7	---	0.7
Kohlrabi	1.0	0.7	---	0.7
Mustard Greens	1.0	---	---	0.7
Beans	1.0	0.7	1.0	0.7
Peas	1.0	0.7	1.0	0.7
Soybeans	0.1	---	0.1	---
Eggplant	1.0	0.7	1.0	0.7
Peppers	1.0	0.7	1.0	0.7
Tomatoes	1.0	0.7	1.0	0.7
Cucumbers	1.0	0.7	1.0	0.7
Melons	1.0	1.0	1.0	0.5
Pumpkins	1.0	0.7	---	0.5
Squash	1.0	0.7	---	0.7
Citrus Fruits	1.0	1.0	1.0	1.0
Apples	1.0	1.0	1.0	0.5
Pears	1.0	1.0	1.0	0.5
Quince	1.0	1.0	---	0.5
Apricots	1.0	1.0	---	1.0
Cherries	1.0	1.0	---	0.5
Nectarines	1.0	---	---	0.5
Peaches	1.0	1.0	1.0	1.0
Plums	1.0	1.0	---	0.5
Blackberries		1.0	---	0.5
Blueberries	1.0	---	---	0.5

Table 10. Summary of Present Parathion Tolerances (con't)

	Tolerances (ppm)			(MRL)
Commodity	United States[a]	Canada[a]	Mexico[a]	International (Codex)[b]
Boysenberries	1.0	---	---	0.5
Cranberries	1.0	1.0	---	0.5
Currants	1.0	---	---	0.5
Dewberries	1.0	---	---	0.5
Gooseberries	1.0	1.0	---	0.5
Grapes	1.0	1.0	---	0.5
Loganberries	1.0	1.0	---	0.5
Raspberries	1.0	1.0	---	0.5
Strawberries	1.0	1.0	1.0	0.5
*Youngberries	1.0	---	---	0.5
Almonds	0.1	---	0.1	---
Filberts	0.1	---	0.1	---
Pecans	0.1	---	0.1	---
Walnuts	0.1	---	0.1	---
Barley	1.0	---	---	---
Corn	1.0	0.7	1.0	---
Oats	1.0	---	---	---
Rice	1.0	---	---	---
Sorghum	0.1	---	0.1	---
Wheat	1.0	---	---	---
Forage Grass	1.0	---	---	---
Alfalfa Forage	1.25	---	5.0	---
Alfalfa Hay	5.0	---	1.25	---
Clover Forage & Hay	1.0	---	---	---
Vetch Forage & Hay	1.0	---	---	---
Miscellaneous Crops				
Artichokes	1.0	---	1.0	0.7
Avocados	1.0	---	1.0	0.5
Cottonseed	0.75	---	0.75	---
Dates	1.0	---	---	0.5
Figs	1.0	---	1.0	0.5
*Guavas	1.0	---	1.0	0.5
Hops	1.0	1.0	---	---
Mangos	1.0	---	1.0	0.5
Mustard Seed	0.2	---	---	---
Okra	1.0	---	1.0	0.7
Olives	1.0	---	---	0.5
Peanuts	1.0	---	1.0	---
Pineapples	1.0	---	1.0	0.5
Rape Seed	0.2	---	---	---
Sugarcane	0.1	---	0.1	---
Sunflower Seed	0.2	---	---	---

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a/ The U.S., Canadian, and Mexican tolerances are expressed in terms of residues of parathion *per se*.

b/ The Codex Maximum Residue Levels are expressed as residues of parathion and its oxygen analog, paraoxon.

* Although these crops have tolerance there are no EPA registered uses.

IV. REGULATORY POSITION AND RATIONALE

A. REGULATORY POSITIONS AND RATIONALES

1. Special Review

The Agency anticipates initiating a Special Review of parathion because of its concern over acute human toxicity and acute avian toxicity.

Rationale: Based on a review and evaluation of all available data, the Agency anticipates placing parathion into Special Review based on its acute human toxicity and concerns about avian toxicity. The Agency believes that currently registered uses of parathion result in humans and avian wildlife being exposed at levels that meet or exceed the Criteria for Initiation of Special Review set forth in 40 CFR 154.7(a)(1) and (3). These criteria state in part that "the Administrator may conduct a Special Review of a pesticide use if he determines, based on validated tests or other significant evidence, that the use of the pesticide...(1) May pose a risk of serious acute injury to humans... [and] (3) May result in residues in the environment of nontarget organisms [e.g., avian wildlife] at levels which equal or exceed concentrations that are acutely or chronically toxic to such organisms, as determined from tests conducted on representative species or from other appropriate data."

The Agency plans to publish its Notice of Special Review and Notice of Preliminary Determination pursuant to 40 CFR 154.34

within the next year. This notice will announce the basis for the Agency's determination that the Special Review criteria described above have been met.

The Agency has determined that the continued use of parathion products under the present terms and conditions of registration are likely to cause unreasonable adverse effects. The Agency is imposing requirements in this Registration Standard which will reduce the risks to an acceptable level during the period necessary to complete the Special Review.

2. Restricted Use

All parathion products are currently classified as Restricted Use pesticides and this classification is being retained. However, the Agency is now modifying the Restricted Use Statement. Certified applicators are now required to be physically present during application, mixing and loading of the pesticide, and during repair and cleaning of application equipment. Commercial applicators are also required to ensure that all persons engaged in these activities under their direct supervision are informed of all precautionary statements on the label.

Rationale: The acute toxicity of parathion to humans has been well documented by the number of reported incidents of applicators and mixer/loaders being acutely poisoned from exposure to parathion and its toxic residues. Because of this concern, the Agency classified parathion as a Restricted Use Pesticide in 1978. The Agency's concern about parathion's high acute toxicity still remains. Therefore, the Restricted Use classification is now being retained for all parathion products and modified to provide additional protection.

The Agency has imposed the additional requirements in an effort to increase the level of protection afforded to mixer/loaders and applicators. The poisoning incidence data show that a number of incidents have occurred during application from splashing and spillage during mixing and loading of the pesticide, and during repair and cleaning of application equipment. Certified applicators are trained in safe methods of using pesticides. Untrained workers are less likely to be aware of the acute hazards associated with parathion. Requiring the certified applicator to be physically present during these operations will ensure closer supervision and adherence to label requirements.

Commercial applicators are being required to ensure that persons under their direct supervision who are involved in applying, mixing and loading of the pesticide, and repair and cleaning of application equipment, are informed of precautionary statements on the label regarding the use of parathion. This requirement will ensure that persons who may come into contact with the pesticide are aware of and comply with the required measures to protect their health.

3. New Food Uses and Tolerances

The Agency will not grant any new food use registrations or tolerances for parathion.

Rationale: Due to substantial residue chemistry and toxicology data gaps in the parathion data base, the TMRC currently exceeding 100% of the ADI, and the Agency's inability to determine the level of incremental risk because it lacks sufficient data, the Agency will not grant any new food use registrations or tolerances for parathion during the period necessary for the development, submission and review of data to fill the identified residue chemistry and toxicology data gaps and completion of the Special Review.

4. Reentry Requirements

The Agency is changing the currently established two day (48-hour) reentry for apples, citrus, peaches, nectarines and grapes in the states of Arizona, California, Nevada, New Mexico, Oklahoma, Texas, and Utah to seven days. The current two day interval is being retained for all other crops and states.

Rationale: Because of the relatively high number of fieldworker poisoning incidents reported for the above crops, the Agency believes that the present two day reentry interval is inadequate. The large number of poisonings is probably related to the widespread use of the pesticide, to the large amount used on certain crops which require hand harvesting, to the high toxicities of both the parent compound and its more toxic alteration product, paraoxon, and to the relatively high stability of both products on foliage in arid environments.

A large number of the reported incidents have occurred following work in apple, nectarine and peach orchards, and in citrus groves and grape vineyards. The reentry hazard is related to dermal contact with treated foliage. There is greater exposure to workers from the above crops than from lower growing crops because there is contact with more foliage during tasks performed on these crops. The occurrence of incidents is clearly highest in regions of the United States that traditionally have less than 26 inches of rainfall annually. Lack of rainfall and dew tend to increase the persistence of parathion and paraoxon. The states listed above all have agricultural areas where the average annual rainfall is less than 26 inches.

In response to numerous poisoning episodes in the State, the California Department of Food and Agriculture (CDFA) established reentry intervals ranging from 2 to 60 days depending on the crop, usage rate, liquid volume applied, occurrence of rainfall after application, and the county where the pesticide is used. Texas has established a seven day reentry period for these crops.

Despite observance of these intervals, yet another poisoning episode recently occurred in California in 1985. Four members of a crew of thirteen fieldworkers involved in hand harvesting of grapefruit became ill after contact with elevated levels of parathion and paraoxon residues in duff (dead leaves, twigs and dust) in the grove. This grove had been treated with parathion forty-six days prior to harvesting. In response to this episode, the CDFA proposed a 75-day reentry interval for use on citrus in the three adjacent counties of Kern, Tulare, and Fresno.

The Agency is requiring a seven day reentry period because of the cultural practices required by these crops and because this interim seven-day reentry interval will provide the extra needed protection to fieldworkers. The Agency issued a 3(c)(2)(B) Notice on November 27, 1985, requiring parathion registrants to provide data to support the appropriate reentry intervals. These data have been received and upon their review, further modification of these intervals may be required.

5. Protective Clothing and Equipment

Existing Federal labeling requires the use of protective clothing and equipment during application of parathion. The type of protective clothing and equipment required includes waterproof pants, coat, hat, rubber gloves and boots, safety goggles, and a mask or respirator approved for use with parathion.

This Standard requires the use of this same protective clothing and equipment during mixing/loading operations and during repair and cleaning of equipment used to mix, load, and apply the pesticide. This protective clothing and equipment would also be required if treated fields are entered prior to the end of the reentry interval.

Rationale: The Agency has decided to require the use of protective clothing and equipment for mixing/loading operations and repair and cleaning of application equipment, and for early reentry into treated fields because of the number of poisoning incidents that have been associated with these activities. Repair and cleaning of application equipment may involve a risk of spillage or rupture of lines and hoses, and result in exposure to mixer/loaders and applicators. Poisonings as a result of early reentry into treated fields are well documented. Requiring persons engaged in these activities to wear the protective clothing and equipment described above should reduce the number of poisonings which occur.

6. Alternative Protective Clothing and Equipment

The modified label provides that alternative protective clothing and equipment may be worn if mixing/loading is performed using a closed system, or if application is performed using an enclosed cab or cockpit. The alternative protective clothing and equipment is less extensive than that required in other circumstances.

Rationale: --Studies have demonstrated that the use of closed mixing/loading systems and enclosed cabs can substantially reduce exposure to some highly toxic pesticides (GS00155025). However, because of the impact the required use of this equipment would have on users of this pesticide, the Agency has decided against its use at this time. The Agency will assess the feasibility of requiring the use of this equipment during the Special Review process. In the interim, the Agency wishes to encourage the use of this equipment. The Agency is giving applicators the option of using less extensive protective clothing and equipment if closed mixing/loading systems and/or enclosed cabs and cockpits are used. The protective clothing and equipment required if closed mixing/loading systems are used includes chemical resistant

9. National Pesticide Telecommunications Network

The Agency has added the telephone number of the National Pesticide Telecommunications Network to the label (1-800-858-7378).

Rationale: The telephone number is included in order to provide an additional source of first aid information in the event of a pesticide accident.

10. Endangered Species Concerns

Endangered species labeling is required for certain parathion uses. As further information becomes available, additional endangered species labeling may be required by the Agency.

Rationale: The Agency has evaluated the potential for parathion to jeopardize endangered species which reside in areas where this pesticide is used. This assessment was made in conjunction with analyses of all pesticides under the generic cluster approach which considers the risks to endangered species on a crop-by-crop basis.

The Agency is not focusing on the risk to endangered species in the Special Review because it believes that labeling required in this standard is the most efficient and effective manner of mitigating those risks. Appropriate labeling for the protection of endangered species is being developed in conjunction with the Office of Endangered Species (OES) of the U.S. Fish & Wildlife Service and the U.S. Department of Agriculture (USDA), with cooperation from the extension services, and the National Agricultural Chemical Association (NACA). The labeling developed gloves and apron, and a long-sleeved shirt (or gauntlets and a short-sleeved shirt) and long-legged pants. If application is made using an enclosed cab or cockpit, a long-sleeved shirt and long-legged pants must be worn. Chemical resistant gloves must be available for exiting the vehicle or aircraft.

7. Human Flaggers

The Agency is prohibiting the use of human flaggers during aerial application of parathion.

Rationale: Human flaggers face a substantial risk, either directly or through drift, of being exposed to parathion because of the nature of aerial application and the changing wind conditions. Incidence data also show a number of poisonings to human flaggers.

8. Storage and Laundering of Personal Clothing

Existing labeling for parathion contains numerous directions regarding personal hygiene and cleaning of protective clothing and equipment after working with the pesticide. The modified label adds a requirement that personal clothing which is worn while working with parathion be stored and laundered separately from other household items.

Rationale: This requirement is intended to prevent poisonings of workers or other household members through secondary exposure to contaminated personal clothing.

under this approach will encompass all endangered species threatened by the use of designated pesticides on a particular crop. Based on terrestrial residue analysis and aquatic runoff modeling, it appears that certain use patterns of parathion have sufficient exposure to pose a hazard to listed species. The Agency's analysis shows a hazard to endangered and threatened mammals, birds, fish, aquatic invertebrates, reptiles and insects.

The criteria used by the Agency to determine whether a pesticide poses a risk to the continued existence of an endangered or threatened species are significantly more stringent than those used for non-endangered species. Terrestrial endangered species are determined to be at risk if pesticide residue levels are one-fifth of the LC_{10} or one-tenth of the LC_{50}. Aquatic endangered species are determined to be at risk if residue levels are one-tenth of the LC_{10} or one-twentieth of the LC_{50}. By contrast, non-endangered terrestrial species are determined to be at risk if the residue levels are greater than or equal to the LC_{50}. Non-endangered aquatic species are determined to be at risk if residues are greater than or equal to one half of the LC_{50}.

Since 1982, cotton, corn, small grains (wheat, barley, rye, and oats), sorghum, soybeans, rangeland, forest, and mosquito larvicide registrations have been reviewed under the cluster project. Parathion is registered for some of these sites. The hazard to endangered species from other uses of parathion has been determined by review and formal consultation with OES, or by examining consultations prepared on other pesticides used on the same sites and with the same use pattern(s). In these investigations, use of parathion was found to pose potential hazards to the following endangered species:

a. Cluster Opinions

The various cluster opinions resulted in the following jeopardy findings which apply to parathion uses:

1. Crops

Attwater's greater prairie chicken (cotton, soybeans, corn, sorghum and small grains)
Aleutian Canada goose (small grains, corn)
Everglade kite (corn)
Valley elderberry longhorn beetle (small grains, corn)
Delta green ground beetle (small grains, corn)
Mollusks (soybeans, small grains, corn, sorghum and cotton)
Kern primrose sphinx moth (small grains, corn and cotton)
Slackwater darter (small grains, soybeans, corn and cotton)
Scioto madtom (corn, soybeans and wheat)
Woundfin (corn, sorghum and small grains)
Pecos gambusia (cotton)
Commanche Springs pupfish (cotton)

2. Range and Pastureland

Aleutian Canada goose
California condor
Whooping crane
Masked bobwhite
Santa Cruz long-toed salamander
Eastern indigo snake
Hawaiian goose
New Mexican ridge-nosed rattlesnake
Mississippi sandhill crane
San Marcos salamander
Mollusks
Houston toad
Kentucky cave shrimp
Wyoming toad
Slackwater darter
Desert tortoise
Snail darter
Valley elderberry longhorn beetle
Watercress darter
Kern primrose sphinx moth
Alabama cavefish
Kendall Warm Springs dace
Leon Springs pupfish
Fountain darter
San Marcos gambusia
Commanche Springs pupfish
Arizona (Apache) trout
Bonytail chub
Woundfin
Gila topminnow
Owens River pupfish
Unarmored threespine stickleback
Paiute cutthroat trout
Little kern golden trout
Greenback cutthroat trout
Colorado squawfish
Humpback chub
Ash Meadows speckled dace
Ash Meadows amargosa pupfish
Cui-ui
Devils Hole pupfish
Pahrump killifish

Delta green ground beetle
Okaloosa darter
Socorro isopod
Maryland darter
Bayou darter
Spotfin chub
Scioto madtom
Yellowfin madtom
Slender chub
Warm Springs pupfish
Pahranagat bonytail
Pecos gambusia
Gila trout
Chihuahua chub
Leopard darter
Borax Lake chub
Clear Creek gambusia

3. Mosquito Larvicides

Yuma clapper rail
California clapper rail
Freshwater mussels
Aleutian Canada goose
Salt marsh harvest mouse
Light-footed clapper rail
California least tern
Hawaiian gallinule
Slackwater darter
Snail darter
Watercress darter
Big Bend gambusia
Clear Creek gambusia
Amistad gambusia
Pecos gambusia
San Marcos gambusia
Hawaiian coot
Hawaiian stilt
Mississippi sandhill crane
Socorro isopod
Madison Cave isopod
Whooping crane (Grays Lake population)
Kentucky Cave shrimp
Alabama cavefish
Mohave tui chub
Slender chub
Spotfin chub
Ash Meadows speckled dace
Kendall Warm Springs dace
Maopa dace
Bayou darter
Fountain darter
Leopard darter
Maryland darter
Warm Springs pupfish
Pahrump killifish
Scioto madtom
Woundfin
Yellowfin madtom
Ash Meadows amargosa pupfish
Commanche Springs pupfish
Devils Hole pupfish
Leon Springs pupfish
Unarmored threespine stickleback
Okaloosa darter
Gila topminnow
Owens River pupfish

b. Other Biological Opinions

The Agency also examined biological opinions prepared for other pesticides which are used on the same sites as parathion and which have similar use patterns. The use of these other pesticides was determined to have met the risk criteria for posing a hazard to endangered species. The Agency believes that parathion would also jeopardize the endangered species listed under each of the following pesticides. These species are included in the endangered species labeling found in Section IV D. of this document.

1. Species in Jeopardy

Tralomethrin (cotton)

San Marcos salamander
Texas blind salamander
Houston toad
Alabama cavefish
Bayou darter
Fountain darter
Leopard darter
San Marcos gambusia
Gila topminnow

Carbosulfan (apples and pears)

Valley elderberry longhorn beetle
Blunt-nosed leopard lizard
Aleutian Canada goose
Santa Cruz long-toed salamander
Mollusks
Slackwater darter
Woundfin

Captafol (fruits and vegetables)

Everglade kite
Colorado squawfish
Woundfin
Leopard darter
Humpback chub
Bonytail chub
Ozark cavefish
Delta green ground beetle
Kern primrose sphinx moth
Unarmored threespine stickleback
Maryland darter
Slackwater darter
Yellowfin madtom
Slender chub
Spotfin chub
Mussels
Valley elderberry longhorn beetle

Chlorpyrifos (alfalfa)
Houston toad
Aleutian Canada goose
Pahranagat bonytail
Cui-ui
Fountain darter
Pecos gambusia
San Marcos gambusia
Pahrump killifish
Commanche Springs pupfish
Colorado squawfish
Unarmored threespine stickleback
Woundfin
Mollusks

Carbofuran (barley, oats, rye, wheat)

Aleutian Canada goose
Kern primrose sphinx moth

Carbofuran and Phorate (peanuts)

Attwater's greater prairie chicken

Carbofuran and Phorate (rice)
  Aleutian Canada goose
Thiobencarb (rice)
  Fat pocketbook pearly mussel
Tilt (pecans)
  Mollusks

2. Non-jeopardy decisions

Biological opinions prepared for the pesticides listed below did not indicate that they would jeopardize any endangered species as a result of their use on designated crops. The Agency has therefore concluded that the use of parathion on the listed crops would not jeopardize endangered species. No endangered species labeling is required for non-jeopardy decisions.

Carbofuran (sugar beets, sugarcane, tobacco, peppers, potatoes, sweet potatoes, strawberries and grapes [there is a biological opinion outstanding that will deal specifically with grape use])

Chlorpyrifos (broccoli, Brussels sprouts, nectarines, cabbage, cauliflower,radish and tomatoes)
Aldicarb (tomatoes and citrus)

Chlorpyrifos (citrus)

Phorate (tomatoes, potatoes, Brussels sprouts, sugarcane, hops, lettuce and sugar beets)

c. Remaining Uses

Parathion is registered for many uses that have not been reviewed in the cluster project. It is anticipated that little exposure to listed species will occur from the rest of the registered uses: almonds, apricots, artichokes, avocado, beans, beets, blackberries, blackeyed peas, blueberries, boysenberries, cauliflower, celery, cherries, clover, collards, carrots, cranberries, currants, cucumbers, dates, eggplant, endive, filbert, figs, garlic, kale, kohlrabi, mangoes, melons, mustard greens, olives, onions, peaches, peas, pineapples, plums, prunes, pumpkins, quince, rape, rutabaga, safflower, spinach, squash, sunflowers, swiss chard, turnips, vetch, walnuts and ornamentals. It is unlikely that these future crop reviews will add endangered species to the list thus far established, due to the broad geographical distribution of the crops already reviewed.

Endangered species labeling statements are included in the section of this document entitled "Required Labeling--Environmental Hazards Statement", and "Required Labeling--Endangered Species Restrictions". There is one label statement for crops, one for pasture/rangeland and one for mosquito larvicide uses. The label statements for crops and pasture/rangeland indicate that the user must obtain the EPA Endangered Species Bulletin before using the parathion product. The mosquito larvicide products do not contain a reference to an EPA Endangered Species Bulletin. Mosquito larvicides are applied by mosquito abatement districts which will be required to contact endangered species specialists for guidance prior to use.

11. Ocular effects data

The Agency is requiring parathion registrants to submit additional subchronic studies, such as electroretinograms and direct corneal measurements, to determine the potential for parathion to cause retinal degeneration and changes in corneal shape and structure.

Rationale: Recent studies as well as historical data have clearly implicated the organophosphates in general and parathion in particular, in such eye effects as retinal degeneration and myopia. Because of this concern the Agency has required under a separate Data Call-In Notice dated November 27, 1985, the submission of additional subchronic studies, such as electroretinograms and direct corneal measurements. These studies are to be conducted on both the rat and dog and are to be of 1-year duration. These data will provide additional information necessary to determine the potential for parathion to cause retinal degeneration and changes in corneal shape and structure.

12. Sciatic nerve effects data

The Agency is requiring parathion registrants to submit additional sciatic nerve effects studies to determine the NOEL for these effects.

Rationale: The observation of abnormal gait in the hind limbs of female rats treated with 50 ppm parathion (the highest dose tested) in a recent rat chronic feeding study (GS00155011) prompted special histopathological examination of the sciatic nerves in animals tested at the high dose level. These examinations showed compound-related toxicity such as loss of myelinated fibers with increased perivascular myelin debris and Schwann cell proliferation, degenerative changes characterized as cholesterol clifts, myelin ovoids, myelin sheath ballooning, and loss of myelinated fibers in the males. The teased nerve fiber preparation showed significant degenerative differences between control and test animals at the high dose in both sexes. However, since the special histopathological examinations were not performed on the test animals which received low and intermediate doses, a NOEL for these sciatic nerve effects could not be established. Because of this concern the Agency has required under a separate Data Call-In Notice dated November 27, 1985, the submission of additional sciatic nerve effects studies. These data will provide additional information necessary to determine the NOEL for parathion related sciatic nerve effects.

13. Spray drift data

The Agency is imposing pesticide spray drift data requirements for parathion products. The data being required include droplet size spectrum studies, field evaluation of pesticide drift and granular integrity studies.

Rationale: The Agency is concerned about hazards to nontarget organisms (fish and wildlife, domestic animals and humans) caused by drift from aerial and ground air-blast applications of parathion. Many of the parathion exposure/poisoning related incidents reported to the Agency have been related to drift. In addition, granular particle sizes are known to be reduced inside the packaging material. The smaller granules are more likely to drift and pose an inhalation hazard to loaders and fieldworkers. These data will help the Agency evaluate the potential for drift to occur when parathion is used in aerial and ground air-blast operations. Review of these data may lead to further regulatory action.

14. Quantitative data on the permeability of protective clothing.

The Agency is requiring quantitative data on the permeability of various materials used for protective clothing and equipment (gloves, boots, protective garments, etc.) for all liquid formulations of parathion. In the interim, the Agency is requiring upgraded labeling for liquid based products. These labeling statements can be found in Section VI-D of this Registration Standard.

Rationale: Because of the potential hazards to mixer/loaders and applicators associated with parathion and the accident history and widespread use of parathion, there is a need to know which materials are most effective in protection against parathion contamination. Quantitative permeation and breakthrough time data are not available to adequately assess the "protective" value of gloves and other protective clothing items that are currently in use. The generation and submission of these data will aid the Agency in determining which type(s) of material(s) to require for protective clothing. In the interim, protective clothing requirements are based on the best information available at this time.

15. Additional Benefits Information

The Agency plans to conduct a detailed benefits analysis of certain sites which it believes would be most adversely affected if parathion were cancelled as a result of the Special Review, including almonds, apples, cherries, lettuce, onions, peaches, plums, rice, sorghum, sugarcane, and wheat. The Agency is soliciting the benefits information described below to support its assessment of the economic impact.

Rationale: During the course of this Special Review, the Agency will focus its benefits analysis on the sites identified above. The criteria used to select these sites were: (1) the site accounts for a high percentage of the total amount of parathion used in the Unitied States (sorghum and wheat); (2) a high percentage of the total crop is treated with this pesticide (almonds, apples, cherries, lettuce, onions, peaches, plums, and sugarcane); and (3) there may be no viable alternatives to control one or more of the pests (tadpole shrimp on rice).

The Agency believes that few major benefits are likely to be associated with the use of parathion on many of the remaining registered sites. The Agency, nevertheless, wishes to solicit benefits data on these remaining registered uses. Examples of such benefits information may include the use of parathion against major pests on minor crops, or regionally important pests on a crop for which there may be no viable alternatives. In the absence of such benefits information for these sites, the Agency may assume that the benefits are negligible , and no further analysis will be conducted.

The user community, other government agencies, and the interested public are encouraged to submit data to support any benefits claims on the principal sites listed above, or on any of the remaining sites. Persons who desire to submit benefits information are requested to provide the following kinds of information for each crop site addressed, along with any other relevant information they desire to include.

a. Comparative Efficacy Reports

All available field test results comparing parathion with possible chemical and nonchemical alternatives at recommended dosage rates and methods of application or implementation should be submitted. Field tests should not be over five seasons old, unless such tests encompass a series of years ending within the five year period. The Agency will accept older data, but its utility may be limited by such factors as the development of pesticide resistant strains. Field test results should include:

i. Growing conditions and other pertinent factors that impact on the results.

ii. Data relating to the degree or percent of pest control and/or reduction in damage achieved, plus conparative yeild and quality data using acceptable agricultural practices, plot designs, and statistical analyses that compare parathion with possible alternatives.

iii. Data on nontarget organisms (e.g., predators, parasites, pathogens, and other introduced or endemic species) that are affected by parathion and the other pesticides or pest management programs being tested (e.g., integrated pest management data [IPM]).

iv. Data on the development of resistance by target pests to parathion or its alternatives.

b. Pesticide Profile Information

The Agency is requesting additional information concerning pesticide use practices. This information should include the following:

i. Copies of the most recent State recommendations for the crops(s) in question, which list parathion and any other alternative pesticide(s) and\or other nonchemical pest management programs.

ii. Data on pesticide or pest management program characteristics that determine the choice or pesticides or other control strategies including their restrictions, limitations, and benefits.

iii. Pest spectrum (species or groups) that are controlled by each pesticide or pest control strategy.

iv. Pest management programs currently used by growers and any other research programs which could modify pest management practices within the next two or three growing seasons.

v. Information on how the crop(s) is grown (crop management) and crop development (phenology) in relation to pest biology and population dynamics.

c. Economics Data

The Agency is requesting additional economics data listed below:

i. For each crop addressed, usage of parathion and any alternatives (preferably by target pest(s) in terms of acres treated, number of applications per season, and pounds of active ingrediet (quantities expressed by State or region are preferable to national totals).

ii. Actual application rate(s) (individual amount or a range where appropriate) in terms of active ingredient per acre or similar unit.

iii. Retail price of parathion and alternatives in terms of dollars per acre or similar unit. When applicable, submit rates charged. When grower applied, use rates as specified in crop production budgets.

iv. Economic profile of current users of parathion and of of "downstream" processors potentially affected by that are potentially affected by price or supply shifts of the crop in question (e.g., fruit canneries).

v. Enterprise or crop budget data (costs and returns) for the typical user.

vi. Price elasticity of demand (raw commodity and at the retail level) for the crop in question.

Rationale: The Agency needs the above data in order to conduct its benefit analysis.

15. Continuation of Registration

While data gaps are being filled, and the Special Review is being completed, currently registered manufacturing use products (MUPs) and end use products (EPs) containing parathion as the sole active ingredient may be sold, distributed, formulated and used, subject to the terms and conditions specified in this

Standard. Registrants must provide or agree to develop additional data, as specified in the Data Appendices, in order to maintain existing registrations.

Rationale: Under FIFRA, the Agency may choose not to cancel or withhold registration if data are missing or are inadequate (see FIFRA sec. 3(c)(2)(B) and 3(c)(7)). The issuance of this standard provides a mechanism for identifying data needs. These data will be reviewed and evaluated, after which the Agency will determine if additional regulatory changes are necessary.

B. CRITERIA FOR REGISTRATION

To be registered or reregistered under this Standard, manufacturing-use (MUP) products must contain parathion as the sole active ingredient, bear required labeling, and conform to the product composition, acute toxicity limits, and use pattern requirements listed in this document.

The applicant for registration or reregistration of manufacturing-use products subject to this Standard must comply with all terms and conditions described, including submission of an up-to-date Confidential Statement of Formula, submission of revised labeling, commitment to fill data gaps on the schedules as specified by the Agency and, when applicable, offer to pay compensation as required by sections 3(c)(1)(D) and 3(c)(2)(D) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, 7 U.S.C. 136(c)(1)(D) and 136(c)(2)(D). Registrants of end-use products who qualify for the Formulator's

Exemption must submit five (5) copies of draft labeling incorporating the unique label statements identified in Section D.

No pesticide product containing parathion as an active ingredient may be released for shipment by the registrant after DEC 31 [illegible] unless the product bears an amended label which complies with the requirement of this Standard.

No pesticide product containing parathion as an active ingredient may be distributed, sold, offered for sale, held for sale, shipped, delivered for shipment, or received and (having so received) delivered or offered to be delivered by any person after DEC 31 1988 unless the product bears an amended label which complies with the requirements of this Standard.

C. ACCEPTABLE RANGES AND LIMITS

1. Product Composition Standard

To conform to this standard, manufacturing-use products must contain parathion as the sole active ingredient. Each MUP formulation proposed for registration must be fully described with an appropriate certification of limits, stating maximum and minimum amounts of the active and intentionally added inert ingredients present in their products, as well as impurities found at levels greater than 0.1%.

2. Acute Toxicity Limits

The Agency will consider registration of technical grade or manufacturing-use products containing parathion which are substantially similar to products already registered, provided the product is supported by appropriate acute toxicity data and the labeling for the product bears appropriate precautionary statements. The signal word required for all parathion technical grade and manufacturing-use products is DANGER.

3. Use Patterns

To be registered under this Standard, manufacturing-use products must be labeled for formulation into other manufacturing-use products or into end-use products bearing federally registered uses. The EPA Compendium of Acceptable Uses, appendix III, lists all federally registered uses as well as approved maximum application rates.

D. REQUIRED LABELING

All manufacturing-use products and end-use parathion products must bear appropriate labeling as specified in 40 CFR 162.10. Appendix II contains information on label requirements. In addition to the above, the following information must appear on the labeling:

1. Ingredient Statement

Registrants of all parathion products are required to revise their labels to the following format:

ACTIVE INGREDIENTS:
Parathion (O,O diethyl-O-p-nitrophenyl-
phosphorothioate.............______%

INERT INGREDIENTS:.......................______%.

2. Use Pattern Statements

All manufacturing-use parathion products must state that they are intended for formulation into other manufacturing-use products or end-use products for uses accepted by the U.S. Environmental Protection Agency. A limiting factor will be data that support these use patterns. No use may be included on the label where the registrant fails to agree to comply with the data requirements listed in Tables A and B for that use pattern.

3. Precautionary Statements

Labels for manufacturing-use products and end use products must bear statements reflecting the compound's acute human toxicity. Parathion is in Toxicity Category I and the required precautionary statements associated with this category are specified in 40 CFR 162.10. Also, refer to PR Notice 73-4 regarding the required graphics, skull and crossbones and other precautionary labeling requirements that continue to remain in effect.

4. Environmental Hazards Statements

The following revised environmental hazard statement must appear on all MUP labels:

> "This pesticide is highly toxic to fish and wildlife. Do not discharge effluent containing this active ingredient into lakes, streams, ponds, estuaries, oceans, or public waters unless this product is specifically identified and addressed in an NPDES permit. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance

contact your State Water Board or Regional Office of the EPA."

For end-use products the Environmental Hazards section of the label must read:

a. Granular Products (non-aquatic uses)

This pesticide is highly toxic to fish and wildlife. Birds in treated areas may be killed. Do not apply directly to water. Drift and runoff from target areas may be hazardous to aquatic organisms in adjacent aquatic sites. Cover or incorporate granules which are spilled. Do not contaminate water by cleaning of equipment or disposal of wastes.

b. Nongranular Products (non-aquatic uses)

This pesticide is highly toxic to fish and wildlife. Birds in treated areas may be killed. Do not apply directly to water or wetlands (swamps, marshes, bogs, and potholes). Run-off and drift from target areas may be hazardous to aquatic organisms in adjacent aquatic sites. Do not contaminate water by cleaning of equipment or disposal of wastes.

c. Aquatic Use (Mosquito Larvicide)

This pesticide is highly toxic to fish and wildlife. Fish and other aquatic organisms in treated areas may be killed. When treating lakes or other open bodies of water apply only to shallow edges. Consult with state fish and game departments before applying to public waters.

d. Aquatic Use (Rice)

This pesticide is highly toxic to fish and wildlife. Fish and other aquatic organisms may be killed at recommended application rates. Do not contaminate water by cleaning of equipment or disposal of wastes.

e. Required Bee Caution (all formulations except granulars)

This product is extremely toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow to drift to blooming crops or weeds if bees are visiting the treatment area.

f. Endangered Species Considerations

The Agency informs the pesticide applicator of these risks through the use of the EPA Endangered Species Bulletins. The pesticide applicator must consult both the bulletin and endangered species labeling that follows in order to reduce the risk of exposure to endangered species.

5. ENDANGERED SPECIES RESTRICTIONS

Please refer to the following pages for the required labeling instructions and restrictions.

ENDANGERED SPECIES RESTRICTIONS

a. Parathion Endangered Species Labeling information for Crop Uses

The use of any pesticide in a manner that may kill or otherwise harm an endangered or threatened species or adversely modify their habitat is a violation of federal laws. The use of this product is controlled to prevent death or harm to endangered or threatened species that occur in the following counties or elsewhere in their range.

Before using this pesticide in the following counties you must obtain the EPA Cropland Endangered Species Bulletin. The use of this pesticide is prohibited in these counties unless specified otherwise in the Bulletin. The EPA Bulletin is available from either your County Agricultural Extension Agent, the Endangered Species Specialist in your State Wildlife Agency Headquarters or the appropriate Regional Office of either the U.S. Fish and Wildlife Service (FWS) or the U.S. Environmental Protection Agency. THIS BULLETIN MUST BE REVIEWED PRIOR TO PESTICIDE USE.

STATE (Regional office FWS) Species	COUNTY	
ALABAMA (Atlanta, GA.)		
Slackwater darter	LAUDERDALE LIMESTONE	MADISON
Alabama cavefish	LAUDERDALE	
Freshwater mussels	COLBERT JACKSON	MARSHALL MORGAN
ARIZONA (Albuquerque, N.M.)		
Woundfin	MOHAVE	
Bonytail chub	MOHAVE	
Gila topminnow	GRAHAM	SANTA CRUZ
ARKANSAS (Atlanta,GA.)	CLAY	RANDOLPH
Freshwater mussels	CLARK CROSS LAWRENCE	SHARP ST. FRANCIS
Ozark cavefish	BENTON	
Leopard darter	SEVIER	
CALIFORNIA (Portland, OR.)		
Delta green ground beetle	SOLANO	
Valley elderberry longhorn beetle	MERCED SACRAMENTO	
Aleutian Canada goose	COLUSA MERCED	SUTTER STANISLAUS
Kern primrose sphinx moth	KERN	
Blunt-nosed leopard lizard	FRESNO KERN KINGS MADERA MERCED	MONTEREY SAN LUIS OBISPO SANTA BARBARA STANISLAUS TULARE
Santa Cruz long-toed salamander	MONTEREY	SANTA CRUZ
Unarmored three-spine stickelback	LOS ANGELES	SANTA BARBARA

STATE (Regional office FWS) Species	COUNTY	
COLORADO (Denver, CO.)	BLANCO	MOFFAT
Colorado squawfish	DELTA	RIO
	GARFIELD	ROUTT
	MESA	
Humpback chub	MESA	
FLORIDA (Atlanta, GA.)	BROWARD	GLADES
Everglade Kite	DADE	PALM BEACH
Species		
KENTUCKY (Atlanta, GA.)	BALLARD	McCRACKEN
Freshwater mussels	EDMUNDSON	PULASKI
	JACKSON	ROCKCASTLE
	LAUREL	WARREN
	MARSHALL	WAYNE
MARYLAND (Newton Corners, MA.)		
Maryland darter	HARFORD	
MISSISSIPPI (Atlanta, GA.)		
Bayou darter	COPIAH	
MISSOURI (Twin Cities, MN.)	CHRISTIAN	NEWTON
Ozark cavefish	GREENE	BARRY
	JASPER	STONE
	LAWRENCE	
NEVADA (Portland, OR.)		
Woundfin	CLARK	
Pahranagat bonytail	LINCOLN	
Cui-ui	WASHOE	
Pahrump killifish	CLARK	WHITE PINE
NEW MEXICO (Albuquerque, N.M.)	CHAVES	
Pecos gambusia	EDDY	
NORTH CAROLINA (Atlanta, GA.)		
Spotfin chub	MACON	SWAIN
OHIO (Twin Cities, MN.)	CHAMPAGNE	MADISON
Scioto madtom	FRANKLIN	PICKAWAY
	LOGAN	UNION
OKLAHOMA (Albuquerque, N.M.)	LEFLORE	
Leopard darter	MCCURTAIN	
Ozark cavefish	DELAWARE	
TENNESSEE (Atlanta, GA.)	LAWRENCE	
Slackwater darter	WAYNE	
Slender chub	CLAIBORNE	HANCOCK
Spotfin chub	CUMBERLAND	MORGAN
	FENTRESS	
Freshwater mussels	BLOUNT	MARSHALL
	CLAIBORNE	MAURY
	DECATUR	RHEA
	FRANKLIN	ROANE
	HANCOCK	SCOTT
	HARDIN	SEQUATCHIE
	LINCOLN	SMITH
	LOUDON	SULLIVAN
TEXAS (Albuquerque, N.M.)	ARANSAS	GOLIAD
Attwater's greater prairie chicken	AUSTIN	REFUGIO
	COLORADO	VICTORIA
	FORT BEND	
Commanche Springs pupfish	JEFF DAVIS	

STATE (Regional office FWS) Species	COUNTY	
Texas (con't)		
Pecos gambusia	JEFF DAVIS PECOS	REEVES
Texas blind salamander	HAYS	
San Marcos salamander	HAYS	
San Marcos gambusia	HAYS	
Houston toad	BASTROP	BURLESON
Fountain darter	HAYS	
UTAH (Denver, CO.)		
Woundfin	WASHINGTON	
Humpback chub	GRAND	
Bonytail chub	GRAND	UINTAH
Colorado squawfish	CARBON DUCHESNE EMERY GARFIELD GRAND	KANE SAN JUAN UINTAH WAYNE
VIRGINIA (Newton Corners, MA.)		
Spotfin chub	SCOTT	WASHINGTON
Freshwater mussels	LEE RUSSELL SCOTT SMYTH	TAZEWELL WASHINGTON WISE

b. Parathion Labeling Information for Range and Pastureland Uses

The use of any pesticide in a manner that may kill or otherwise harm an endangered or threatened species or adversely modify their habitat is a violation of federal laws. The use of this product is controlled to prevent death or harm to endangered or threatened species that occur in the following counties or elsewhere in their range.

Before using this pesticide in the above counties you must first obtain the Rangeland Endangered Species Bulletin. The use of this pesticide is prohibited in these counties unless specified otherwise in the Bulletin. The EPA Bulletin is available from either your County Agricultural Extension Agent, the Endangered Species Specialist in your State Wildlife Agency Headquarters or the appropriate Regional Office of either the U.S. Fish and Wildlife Service (FWS) or the U.S. Environmental Protection Agency (EPA). THIS BULLETIN MUST BE REVIEWED PRIOR TO PESTICIDE USE.

STATE (Regional Office FWS) Species	County (unless specified otherwise)
ALABAMA (Atlanta, GA.)	
Alabama cavefish	Lauderdale
Slackwater darter	Lauderdale, Limestone, Madison
Snail darter	Jackson and Madison
Watercress darter	Jefferson
Freshwater mussels	Colbert, Jackson, Marshall, Morgan and Monroe
ARIZONA (Albuquerque, N.M.)	
Arizona (Apache) trout	Apache, Graham and Greenlee
Bonytail chub	Mohave
Woundfin	Mohave
Gila and Yaqui topminnow	Cochise, Graham, Pima, Pinal and Santa Cruz
Masked Bobwhite	Pima
ARKANSAS (Atlanta, GA.)	
Freshwater mussels	Clark, Clay, Cross, Lawrence, Randolph, Sharp and St. Francis
CALIFORNIA (Portland, OR.)	
Owens River pupfish	Inyo and Mono
Unarmored threespine stickleback	Los Angeles and Santa Barbara
Aleutian Canada goose	Colusa, Merced, Stanislaus and Sutter
California condor	Fresno, Kern, Kings, Los Angeles, Monterey, San Benito, San Luis Obispo, Santa Barbara, Tulare and Ventura
Blunt-nosed leopard lizard	Kern, Kings, Fresno, Madera, Merced, Monterey, San Luis Obispo, Santa Barbara, Stanislaus and Tulare
Paiute cutthroat trout	Alpine, Madera and Mono
Little Kern golden trout	Tulare
Santa Cruz long-toed salamander	Monterey and Santa Cruz

STATE (Regional Office FWS) Species	County (unless specified otherwise)
California (con't)	
Delta green ground beetle	Solano
Valley elderberry longhorn beetle	Merced
Kern Primrose sphinx moth	Kern
COLORADO (Denver, Co.)	
Greenback cuttthroat trout	Boulder, Larimer, Gilpin, Park, and Fremont
Colorado squawfish Bonytail chub Humpback chub	Blanco, Delta, Garfield, Rio and Routt
FLORIDA (Atlanta, GA.)	
Okaloosa darter	Okaloosa and Walton
Eastern indigo snake	Statewide
GEORGIA (Atlanta, GA.)	
Snail darter	Catoosa
Eastern indigo snake	S.E. Georgia
HAWAII (Portland, OR.)	
Hawaiian goose	Islands of Maui and Hawaii
IDAHO (Portland, OR.)	
Whooping crane	Caribou, Bear Lake and Bonneville
KENTUCKY (Atlanta, GA.)	
Freshwater mussels	Ballard, Edmundson, Jackson, Laurel, Marshall, McCracken, Pulaski, Rockastle, Warren and Wayne
Kentucky Cave shrimp	Edmundson and Hart
MARYLAND (Newton Corners, MA.)	
Maryland darter	Harford
MISSISSIPPI (Atlanta, GA.)	
Bayou darter	Claiborne and Copiah
Mississippi sandhill crane	Jackson
NEVADA (Portland, OR.)	
Ash Meadows speckled dace	Nye
Ash Meadows amargosa pupfish	Nye

STATE (Regional Office FWS) Species	County (unless specified otherwise)
Nevada (con't)	
Cui-ui	Washoe
Devils Hole pupfish	Nye
Pahrump killifish	Clark, White Pine
Warm Springs pupfish	Nye
Pahranagat bonytail	Lincoln
NEW MEXICO (Albuquerque, N.M.)	
Socorro isopod	Socorro
Pecos gambusia	Chaves, Eddy
Gila trout	Catron, Grant
Chihuahua chub	Grant
New Mexican ridge-nosed rattlesnake	Hidalgo
NORTH CAROLINA (Atlanta, GA.)	
Spotfin chub	Macon, Swain
OHIO (Twin Cities, MN.)	
Scioto Madtom	Champagne, Franklin, Logan, Madison, Pickway, Union
OKLAHOMA (Albuquerque, N.M.)	
Leopard darter	Pushmataha, McCurtain
OREGON (Portland, OR.)	
Borax lake chub	Harney
TENNESSEE (Atlanta, GA.)	
Slender chub	Claiborne, Hancock
Spotfin chub	Cumberland, Fentress, Morgan
Slackwater darter	Lawrence, Wayne
Snail darter	Bradley, Hamilton, Knox, Loudon, Marion, Meigs and Polk

STATE (Regional Office FWS) Species	County (unless specified otherwise)
TENNESSEE (continued)	
Yellowfin madtom	Claiborne, Hancock, Monroe
Freshwater mussels	Blount, Claiborne, Decatur, Franklin, Hancock, Hardin, Hawkins, Lincoln, Loudon, Marshall, Maury, Rhea, Roane, Scott, Sequatchie, Smith, Sullivan
TEXAS (Albuquerque, N.M.)	
Fountain darter	Comal, Hays
Pecos gambusia	Jeff Davis, Pecos, Reeves
San Marcos gambusia	Hays
Commanche Springs pupfish	Jeff Davis, Reeves
Leon Springs pupfish	Pecos
Clear Creek gambusia	Menard
San Marcos salamander	Hays
Houston toad	Bastrop, Burleson
UTAH (Denver, CO.)	
Woundfin	Washington
Colorado squawfish Bonytail chub Humpback chub	Carbon, Duchesne, Emery, Garfield, Grand, Kane, San Juan, Uintah, Wayne
Desert tortoise	Washington
VIRGINIA (Newton Corners, MA.)	
Slender chub	Lee, Scott
Spotfin chub	Scott, Washington
Yellowfin madtom	Lee, Russell, Scott
Freshwater mussels	Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise

STATE (Regional Office FWS) Species	County (unless specified otherwise)
WYOMING (Denver, CO.)	
Kendall Warm Springs dace	Sublette
Wyoming toad	Albany
Whooping crane	Lincoln, Sublette

c. Parathion Labeling Information for Mosquito Larvicide Use

ENDANGERED SPECIES RESTRICTIONS

The use of any pesticide in a manner that may kill or otherwise harm an endangered or threatened species or adversely modify their habitat is a violation of federal laws. The use of this product is controlled to prevent death or harm to endangered or threatened species that occur in the following counties or elsewhere in their range.

Before using this pesticide in these counties you must first contact and obtain permission from the Endangered Species Specialist in your State Wildlife Agency Headquarters or the appropriate Regional Office of the U.S. Fish and Wildlife Service (FWS).

STATE (Regional Office FWS) Species	County (unless specified otherwise)
ALABAMA (Atlanta, GA.)	
Alabama cavefish	Lauderdale
Slackwater darter	Lauderdale, Limestone, Madison
Snail darter	Jackson, Madison
Watercress darter	Jefferson
Freshwater mussels	Colbert, Jackson, Marshall, Morgan
ARIZONA (Albuquerque, N.M.)	
Woundfin	Mohave

STATE (Regional Office FWS) Species	County (unless specified otherwise)
TENNESSEE (continued)	
Yellowfin madtom	Claiborne, Hancock, Monroe
Freshwater mussels	Blount, Claiborne, Decatur, Franklin, Hancock, Hardin, Hawkins, Lincoln, Loudon, Marshall, Maury, Rhea, Roane, Scott, Sequatchie, Smith, Sullivan
TEXAS (Albuquerque, N.M.)	
Fountain darter	Comal, Hays
Pecos gambusia	Jeff Davis, Pecos, Reeves
San Marcos gambusia	Hays
Commanche Springs pupfish	Jeff Davis, Reeves
Leon Springs pupfish	Pecos
Clear Creek gambusia	Menard
San Marcos salamander	Hays
Houston toad	Bastrop, Burleson
UTAH (Denver, CO.)	
Woundfin	Washington
Colorado squawfish Bonytail chub Humpback chub	Carbon, Duchesne, Emery, Garfield, Grand, Kane, San Juan, Uintah, Wayne
Desert tortoise	Washington
VIRGINIA (Newton Corners, MA.)	
Slender chub	Lee, Scott
Spotfin chub	Scott, Washington
Yellowfin madtom	Lee, Russell, Scott
Freshwater mussels	Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise

STATE (Regional Office FWS) Species	County (unless specified otherwise)
WYOMING (Denver, CO.)	
Kendall Warm Springs dace	Sublette
Wyoming toad	Albany
Whooping crane	Lincoln, Sublette

c. Parathion Labeling Information for Mosquito Larvicide Use

ENDANGERED SPECIES RESTRICTIONS

The use of any pesticide in a manner that may kill or otherwise harm an endangered or threatened species or adversely modify their habitat is a violation of federal laws. The use of this product is controlled to prevent death or harm to endangered or threatened species that occur in the following counties or elsewhere in their range.

Before using this pesticide in these counties you must first contact and obtain permission from the Endangered Species Specialist in your State Wildlife Agency Headquarters or the appropriate Regional Office of the U.S. Fish and Wildlife Service (FWS).

STATE (Regional Office FWS) Species	County (unless specified otherwise)
ALABAMA (Atlanta, GA.)	
Alabama cavefish	Lauderdale
Slackwater darter	Lauderdale, Limestone, Madison
Snail darter	Jackson, Madison
Watercress darter	Jefferson
Freshwater mussels	Colbert, Jackson, Marshall, Morgan
ARIZONA (Albuquerque, N.M.)	
Woundfin	Mohave

STATE (Regional Office FWS) Species	County (unless specified otherwise)
Arizona (con't)	
Gila and Yaqui topminnows	Cochise, Graham, Pima, Pinal, Santa Cruz
Yuma clapper rail	Mohave, Yuma
ARKANSAS (Atlanta, GA.)	
Freshwater mussels	Clark, Clay, Cross, Lawrence, Randolph, Sharp, St. Francis
CALIFORNIA (Portland, OR.)	
Owens River pupfish	Inyo, Mono
Unarmored threespine stickleback	Los Angeles, Santa Barbara
Aleutian Canada goose	Colusa, Merced, Stanislaus Sutter
Mohave tui chub	San Bernardino
Salt marsh harvest mouse	Alameda, Contra Costra, Marin
Clapper rail	Alameda, Contra Costra, Humbolt, Marin, Monterey, Napa, Solano, San Luis Obispo, San Mateo, Santa Clara, Sonoma
Yuma clapper rail	Imperial, Riverside, San Bernardino
Light-footed clapper rail	Orange, Los Angeles, San Diego, Santa Barbara and Ventura
California least tern	Alameda, Los Angeles, Orange, San Diego, San Mateo, Santa Barbara and Ventura
DISTRICT OF COLUMBIA (Newton Corners, MA.)	
Hay's Spring amphipod	Rock Creek Park

STATE (Regional Office FWS) Species	County (unless specified otherwise)
FLORIDA (Atlanta, GA.) Okaloosa darter	Okaloosa and Walton
GEORGIA (Atlanta, GA.) Snail darter	Catoosa
HAWAII (Portland, OR.) Hawaiian gallinule	Island of Oahu
Hawaiian coot	Islands of Kauai, Maui, Molokai, Niihau and Oahu
Hawaiian stilt	Islands of Kauai, Maui, Niihau and Oahu
IDAHO (Portland, OR.) Whooping crane	Caribou, Bear Lake and Bonneville
KENTUCKY (Atlanta, GA.) Freshwater mussels	Ballard, Edmundson, Jackson, Laurel, Marshall, McCracken, Pulaski, Rockastle, Warren and Wayne
Kentucky cave shrimp	Edmundson and Hart
MARYLAND (Newton Corners, MA.) Maryland darter	Harford
MISSISSIPPI (Atlanta, GA.) Bayou darter	Claiborne and Copiah
Mississippi sandhill crane	Jackson
NEVADA (Portland, OR.) Pahrump killifish	Clark and White Pine
Devils Hole pupfish	Nye
Warm Springs pupfish	Nye
Maopa dace	Lincoln
Ash Meadows speckled dace	Nye
Ash Meadows amargosa pupfish	Nye

STATE (Regional Office FWS) Species	County (unless specified otherwise)
NEW MEXICO (Albuquerque, N.M.)	
Socorro isopod	Socorro
Pecos gambusia	Chaves, Eddy
NORTH CAROLINA (Atlanta, GA.)	
Spotfin chub	Macon, Swain
OHIO (Twin Cities, MN.)	
Scioto Madtom	Champagne, Franklin, Logan, Madison, Pickaway and Union
OKLAHOMA (Albuquerque, N.M.)	
Leopard darter	LeFlore and McCurtain
TENNESSEE (Atlanta, GA.)	
Slender chub	Claiborne and Hancock
Spotfin chub	Cumberland, Fentress and Morgan
Slackwater darter	Lawrence, Wayne
Snail darter	Bradley, Hamilton, Knox, Loudon, Marion, Meigs and Polk
Yellowfin madtom	Claiborne, Hancock and Monroe
Freshwater mussels	Blount, Claiborne, Decatur, Franklin, Hancock, Hardin, Hawkins, Lincoln, Loudon, Marshall, Maury, Rhea, Roane, Scott, Sequatchie, Smith and Sullivan
TEXAS (Albuquerque, N.M.)	
Fountain darter	Comal and Hays
Pecos gambusia	Jeff Davis, Pecos and Reeves
San Marcos gambusia	Hays
Commanche Springs pupfish	Jeff Davis and Reeves
Leon Springs pupfish	Pecos
Clear Creek gambusia	Menard
Big Bend gambusia	Brewster

STATE (Regional Office FWS) Species	County (unless specified otherwise)
UTAH (Denver, CO.) Woundfin	Washington
VIRGINIA (Newton Corners, MA.) Slender chub	Lee and Scott
Spotfin chub	Scott and Washington
Yellowfin madtom	Lee, Russell and Scott
Madison Cave isopod	Augusta
WYOMING (Denver, CO.) Kendall Warm Springs dace	Sublette
Whooping crane	Lincoln and Sublette

6. Worker Protection Statements

Pursuant to PR Notice 83-2, for end-use products, the general worker protection statements specified in that notice must appear on the labeling of outdoor agricultural use products which are applied to crops whose cultural practices include hand labor. In addition, the following reentry interval must be stated on the label:

> "Reentry into apple, citrus, peach, nectarine or grape fields in the states of Arizona, California, Nevada, New Mexico, Oklahoma, Texas, and Utah is prohibited for seven days after the end of application, unless all protective clothing and equipment required for early reentry as described elsewhere on the label is worn. Reentry into all other treated areas is prohibited for 48 hours after end of application, unless all required protective clothing and equipment is worn."

7. Restricted Use Statements

The following "Restricted Use Statement" must appear on the front panel of all end-use labeling.

RESTRICTED USE PESTICIDE

Due to very high acute toxicity to
Humans and Birds

For retail sale to and use only by certified applicator or persons under their direct supervision and only for those uses covered by the certified applicator's certification. Direct supervision for this product is defined as the certified applicator being physically present during application, mixing, loading, repair and cleaning of application equipment. Commercial certified applicators must also ensure that all persons involved in these activities are informed of the precautionary statements.

8. Protective Clothing Statements

The following protective clothing statements are required for all manufacturing-use labeling:

THIS PRODUCT MAY BE FATAL IF SWALLOWED, INHALED, OR IF ALLOWED TO CONTACT SKIN. FAILURE TO PROPERLY FOLLOW ALL INSTRUCTIONS FOR PROTECTIVE CLOTHING AND EQUIPMENT WILL INCREASE YOUR RISK

USE ONLY WHEN WEARING THE FOLLOWING PROTECTIVE CLOTHING AND EQUIPMENT:

1) Waterproof pants, coat, hat, rubber boots or rubber overshoes rubber boots or rubber overshoes. 2) Wear safety goggles 3) NIOSH approved respirator. 4) Wear heavy duty natural rubber gloves.

The following protective clothing statements are required for all end-use labeling:

THIS PRODUCT MAY BE FATAL IF SWALLOWED, INHALED, OR IF ALLOWED TO CONTACT SKIN. FAILURE TO PROPERLY FOLLOW ALL INSTRUCTIONS FOR PROTECTIVE CLOTHING AND EQUIPMENT WILL INCREASE YOUR RISK.

USE ONLY WHEN WEARING THE FOLLOWING PROTECTIVE CLOTHING AND EQUIPMENT DURING MIXING/LOADING, APPLICATION, REPAIR AND CLEANING OF APPLICATION EQUIPMENT, DISPOSAL OF PESTICIDE, AND EARLY REENTRY INTO TREATED FIELDS:

Waterproof pants and coat; heavy-duty chemical-resistant gloves; rubber boots or rubber overshoes; hood or wide-brimmed hat;

safety goggles or face shield; NIOSH approved respirator. In addition, mixer/loaders must wear a chemical resistant apron when using the concentrated product. During aerial application in nonenclosed cockpits, a helmet with a visor may be substituted for the hood or wide-brimmed hat and safety goggles or face shield requirements.

IF MIXING/LOADING IS PERFORMED USING A CLOSED SYSTEM, THE FOLLOWING PROTECTIVE CLOTHING AND EQUIPMENT MAY BE WORN AS AN ALTERNATIVE:

Heavy-duty chemical resistant gloves; chemical resistant apron, long-sleeved shirt (or gauntlets and short sleeve shirt) and long-legged pants; shoes and socks.

Safety goggles or a faceshield must be worn when the system is under pressure. All other protective clothing and equipment required for use with open systems must be available nearby.

IF APPLICATION IS PERFORMED USING AN ENCLOSED CAB OR COCKPIT, THE FOLLOWING PROTECTIVE CLOTHING AND EQUIPMENT MAY BE WORN AS AN ALTERNATIVE:

Clean long-sleeved shirt and long-legged pants. All other protective clothing and equipment required for use during application must be available in the cab and must be worn when exiting the cab into treated areas. If used for this purpose, contaminated clothing may not be brought back into the cab unless in an enclosure such as a plastic bag.

REMEMBER- THIS CLOTHING IS NOT INTENDED TO PROTECT YOU DURING REPAIR AND CLEANING OF APPLICATION EQUIPMENT OR DURING EARLY REENTRY! REFER TO THE INSTRUCTIONS ABOVE.

HUMAN FLAGGERS ARE STRICTLY PROHIBITED DURING AERIAL APPLICATION.

IMPORTANT! If pesticide comes in contact with skin, wash off with soap and water, and contact a physician immediately. Always wash hands, face, and arms with soap and water before smoking, eating, drinking, or toileting.

AFTER WORK: Wash gloves with soap and water before removing. Take off all work clothes and shoes. Store protective clothing separately from personal clothing. Launder protective clothing after each use. Shower using soap and water. Wear only clean clothes when leaving job. Do not wear contaminated clothing. Personal clothing worn during mixing/loading, application, repair and cleaning of application equipment, disposal of pesticide, and early reentry into treated fields must be stored and laundered separately from household articles. Clothing and equipment heavily contaminated or drenched with parathion must be destroyed according to state and local regulations.

HEAVILY CONTAMINATED OR DRENCHED CLOTHING CANNOT BE ADEQUATELY DECONTAMINATED.

Respirators should be cleaned and cartridges replaced according to instructions included with respirators. Replace gloves frequently.

9. Storage and Disposal Statements

All products must have the appropriate storage and disposal statements on the label. Refer to Appendix IV-4 for the appropriate statements.

V. PRODUCTS SUBJECT TO THIS STANDARD

All products containing one or more of the pesticides identified in Section II.A. are subject to certain requirements for data submission or changes in composition, labeling or packaging of the product. The applicable requirements depend on whether the product is a manufacturing or end use product and whether the pesticide is the sole active ingredient or one of multiple active ingredients.

Products are subject to this Registration Standard as follows:

A. Manufacturing use products containing this pesticide as the sole active ingredient are subject to:

1. The restrictions (if any) upon use, composition, or packaging listed in Section IV, if they pertain to the manufacturing use product.
2. The data requirements listed in Tables A and B[2]
3. The labeling requirements specified for manufacturing use products in Section IV.
4. Administrative requirements (application forms, Confidential Statement of Formula, data compensation provisions) associated with reregistration.

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[2] Data requirements are listed in the three Tables in Appendix I of this Registration Standard. The Guide to Tables in that Appendix explains how to read the Tables.

Table A lists generic data requirements applicable to all products containing the pesticide subject to this Registration Standard. Table B lists product-specific data applicable to manufacturing use products. The data in Tables A and B need not be submitted by a producer who is eligible for the formulator's exemption for that active ingredient.

Table C lists product-specific data applicable to end use products. The Agency has decided that, in most cases, it will not require the submission of product-specific data for end use products at this time. Therefore most Registration Standards do not contain a Table C.

B. Manufacturing use products containing this pesticide as one of multiple active ingredients are subject to:

The data requirements listed in Table A.

C. End use products containing this pesticide as the sole active ingredient are subject to:

1. The restrictions (if any) upon use, composition, or packaging listed in Section IV if they pertain to the end use product.

2. If eligible for the formulator's exemption[3], the data requirements listed in Table C.

3. If not eligible for the formulator's exemption, the data requirements listed in Table A and the data requirements listed in Table C.

4. The labeling requirements specified for end use products in Section IV.

D. End use products containing this pesticide as one of multiple active ingredients are subject to:

a. If not eligible for the formulator's exemption, the date requirements listed in Tables A and C.

b. If eligible for the formulator's exemption, the data requirements listed in Table C.

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[3] If you purchase from another producer and use as the source of your active ingredient only EPA-registered products, you are eligible for the formulator's exemption for generic data concerning that active ingredient (Table A) and product-specific data for the registered manufacturing use product you purchase (Table B).

Two circumstances nullify this exemption:

1) If you change sources of active ingredient to an unregistered product, formulate your own active ingredient, or acquire your active ingredient from a firm with ownership in common with yours, you individually lose the exemption and become subject to the data requirements in Table A.

2) If no producer subject to the generic data requirements in Table A agrees to submit the required data, all end use producers lose the exemption, and become subject to those data requirements.

VI. REQUIREMENT FOR SUBMISSION OF GENERIC DATA

This portion of the Registration Standard is a notice issued under the authority of FIFRA sec. 3(c)(2)(B). It refers to the data listed in Table A, which are required to be submitted by registrants to maintain in effect the registration of products containing this active ingredient.[4]

A. What are generic data?

Generic data pertain to the properties or effects of a particular active ingredient. Such data are relevant to an evaluation of all products containing that active ingredient regardless of whether the product contains other ingredients. (unless the product bears labeling that would make the data requirement inapplicable).

Generic data may also be data on a "typical formulation" of a product. "Typical formulation" testing is often required for ecological effects studies and applies to all products having that formulation type. These are classed as generic data, and are contained in Table A.

B. Who must submit generic data?

All current registrants are responsible for submitting generic data in response to a data request under FIFRA sec. 3(c)(2)(B) (DCI Notice). EPA has decided, however, not to require a registrant who qualifies for the formulator's exemption (FIFRA sec. 3(c)(2)(D) and 152.85) to submit generic data in response to a DCI notice if the registrant who supplies the active ingredient in his product is complying with the data request.

If you are not now eligible for a formulator's exemption, you may qualify for one if you change your source of supply to a registered source that does not share ownership in common with your firm. If you choose to change sources of supply, the Confidential Statement of Formula must identify the new source(s) and you must submit a Formulator's Exemption Statement form.

If you apply for a new registration for products containing this active ingredient after the issuance of this Registration Standard, you will be required to submit or cite generic data relevant to the uses of your product if, at the time the application is submitted, the data have been submitted to the Agency by current registrants. If the required data have not yet been submitted, any new registration will be conditioned upon the new registrant's submission or citation of the required data not later than the date upon which current registrants of similar products are required to provide such data. See FIFRA sec. 3(c)(7)(A). If you thereafter fail to comply with the condition of that registration to provide data, the registration may be cancelled (FIFRA sec. 6(e)).

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[4] Registrations granted after issuance of this Standard will be conditioned upon submission or citation of the data listed in this Registration Standard.

C. What generic data must be submitted?

You may determine which generic data you must submit by consulting Table A. That table lists the generic data needed to evaluate current uses of all products containing this active ingredient, the uses for which such data are required, and the dates by which the data must be submitted to the Agency.

D. How to comply with DCI requirements.

Within 90 days of your receipt of this Registration Standard, you must submit to EPA a completed copy of the form entitled "FIFRA Section 3(c)(2)(B) Summary Sheet" (EPA Form 8580-1, enclosed) for each of your products. On that form you must state which of the following six methods you will use to comply with the DCI requirements:

1. You will submit the data yourself.

2. You have entered into an agreement with one or more registrants to jointly develop (or share in the cost of developing) the data, but will not be submitting the data yourself. If you use this method, you must state who will submit the data on which you will rely. You must also provide EPA with documentary evidence that an agreement has been formed which allows you to rely upon the data to be submitted. Such evidence may be: (1) your letter offering to join in an agreement and the other registrant's acceptance of your offer, (2) a written statement by the parties that an agreement exists, or (3) a written statement by the person who will be submitting the data that you may rely upon its submission. The Agency will also require adequate assurance that the person whom you state will provide the data is taking appropriate steps to secure it. The agreement to produce the data need not specify all of the terms of the final arrangement between the parties or a mechanism to resolve the terms.

3. You have attempted to enter into an agreement to jointly develop data, but no other registrant has accepted your offer. You request that EPA not suspend your registration for non-compliance with the DCI. EPA has determined that, as a general policy, it will not suspend the registration of a product when the registrant has in good faith sought and continues to seek to enter into a data development/cost sharing program, but the other registrants developing the data have refused to accept its offer. [If your offer is accepted, you may qualify for Option 2 above by entering into an agreement to supply the data.]

In order to qualify for this method, you must:

1. File with EPA a completed "Certification of Attempt to Enter into an Agreement with other Registrants for Development of Data" (EPA Form 8580-6, enclosed).

2. Provide us with a copy of your offer to the other registrant and proof of the other registrant's receipt of your offer (such as a certified mail receipt). Your offer must, at a minimum, contain the following language or its equivalent:

> [Your company name] offers to share in the burden of producing the data required pursuant to FIFRA sec. 3(c)(2)(B) in the [name of active ingredient] Registration Standard upon terms to be agreed or failing agreement to be bound by binding arbitration as provided by FIFRA section 3(c)(2)(B)(iii).

The remainder of your offer may not in any way attempt to limit this commitment. If the other registrant to whom your offer is made does not accept your offer, and if the other registrant informs us on a DCI Summary Sheet that he will develop and submit the data required under the DCI, then you may qualify for this option. In order for you to avoid suspension under this method, you may not later withdraw or limit your offer to share in the burden of developing the data. In addition, the other registrant must fulfill its commitment to develop and submit the data.

4. You request a waiver of the data requirement. If you believe that a data requirement does not (or should not) apply to your product or its uses, you must provide EPA with a statement of the reasons why you believe this is so. Your statement must address the specific composition or use factors that lead you to believe that a requirement does not apply. Since the Agency has carefully considered the composition and uses of pesticide products in determining that a data requirement applies, EPA does not anticipate that many waivers will be granted. A request for waiver does not extend the timeframes for developing required data, and if your waiver request is denied, your registration may be suspended if you fail to submit the data.

5. You request that EPA amend your registration by deleting the uses for which the data are needed. You are not required to submit data for uses which are no longer on your label.

6. You request voluntary cancellation of the registration of your product(s) for which the data are needed.

E. Procedures for requesting a change in testing protocol.

If you will generate the required data and plan to use test procedures which deviate from (or are not specified in) either EPA's Pesticide Assessment Guidelines or the Reports of Expert Groups to the Chemicals Group, Organization for Economic Cooperation and Development (OECD) Chemicals Testing Programme, you must submit for EPA approval the protocols you propose to use.

You should submit your protocols before beginning testing and await EPA approval, because the Agency will not ordinarily accept as sufficient studies using unapproved protocols. A request for protocol approval will not extend the timeframe for submission of the data, nor will extensions generally be given to conduct studies due to submittal of inappropriate protocols.

F. Procedures for requesting extensions of time.

If you think that you will need more time to generate the data than is allowed by EPA's schedule, you may submit a request for an extension of time. Any request for a time extension which is made as an initial response to a section 3(c)(2)(B) request notice must be submitted in writing to the Product Manager listed at the end of this section and must be made before the deadline for response. Once dates have been committed to and EPA has accepted these commitments, any subsequent requests for a time extension must be submitted in writing to the Office of Compliance Monitoring.

EPA will view failure to request an extension before the response deadline as a waiver of any future claim that there was insufficient time to submit the data. While EPA considers your request, you must strive to meet the deadline for submitting the data.

The extension request should state the reasons why you believe that an extension is necessary and the steps you have taken to meet the testing deadline. Time extensions normally will not be granted due to problems with laboratory capacity or adequacy of funding, since the Agency believes that with proper planning these can be overcome. Time extensions may be considered when joint data development is planned, or when the Agency must approve a new or modified protocol before the study can be begun.

A request for an extension does not extend the timeframe for submission of the data. If EPA denies your request for a time extension and you do not submit the data as requested, EPA may begin proceedings to suspend the registrations of your products.

G. Existing stocks provision upon suspension or cancellation.

The Agency has determined that if a registration is suspended for failure to respond to a DCI request under FIFRA sec. 3(c)(2)(B), an existing stocks provision is not consistent with the Act. Accordingly, the Agency does not anticipate granting permission to sell or distribute existing stocks of suspended product except in rare circumstances. If you believe that your product will be suspended or cancelled and that an existing stocks provision should be granted, you have the burden of clearly demonstrating to EPA that granting such permission would be consistent with the Act. The following information must be included in any request for an existing stocks provision:

1. Explanation of why an existing stocks provision is necessary, including a statement of the quantity of existing stocks and your estimate of the time required for their sale or distribution; and

2. Demonstration that such a provision would be consistent with the provisions of FIFRA.

VII. REQUIREMENT FOR SUBMISSION OF PRODUCT-SPECIFIC DATA

Under its DCI authority, EPA has determined that certain product-specific data are required to maintain your registrations in effect. Product-specific data are derived from testing using a specific formulated product, and, unlike generic data, generally support only the registration of that product. All such data must be submitted by the dates specified in this Registration Standard.

If you have a manufacturing use product, these data are listed in Table B. If you have an end use product, the data are listed in Table C. As noted earlier, the Agency has decided that it will not routinely require product-specific data for end use products at this time. Therefore, Table C may not be contained in this Registration Standard; if there is no Table C, you are not required to submit the data at this time.

In order to comply with the product specific data requirements, you must follow the same procedures as for generic data. See Section IV.D, E, F, and G. You should note, however, that product chemistry data are required for every product, and the only acceptable responses are options IV.D.1. (submit data) or IV.D.6.(cancellation of registration).

Failure to comply with the product-specific data requirements for your products will result in suspension of the product's registration.

VIII. REQUIREMENT FOR SUBMISSION OF REVISED LABELING

FIFRA requires each product to be labeled with accurate, complete and sufficient instructions and precautions, reflecting the Agency's assessment of the data supporting the product and its uses. General labeling requirements are set out in 40 CFR 162.10 (see Appendix II - LABELING and SUMMARY). In addition, labeling requirements specific to products containing this pesticide are specified in Section IV.D of this Registration Standard. Applications submitted in response to this notice must include draft labeling for Agency review.

If you fail to submit revised labeling as required, which complies with 40 CFR 162.10 and the specific instructions in Section IV.D., EPA may seek to cancel or suspend the registration of your product under FIFRA sec. 6.

IX. INSTRUCTIONS FOR SUBMISSION

A. Manufacturing Use Products (MUPs) containing Parathion as sole active ingredient.

1. Within 90 days from receipt of this document, you must submit to the Product Manager in the Registration Division for each product subject to this Registration Standard:

a. The "FIFRA Section 3(c)(2)(B) Summary Sheet" (EPA Form 8580-1), with appropriate attachments.[5]

b. Confidential Statement of Formula (EPA Form 8570-4).

c. Formulator's Exemption Statement if applicable.

d. Evidence of compliance with data compensation requirements of FIFRA sec. 3(c)(1)(D). Refer to 40 CFR 152.80-152.99.

2. Within 9 months from receipt of this document you must submit to the Product Manager:

a. Application for Pesticide Registration (EPA Form 8570-1).

b. Two copies of any required product-specific data (See Table B).

c. Three copies of draft labeling, including the container label and any associated supplemental labeling. Labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for storage in 8-1/2 x 11 files. The draft label must indicate the intended colors of the final label, clear indication of the front panel of the label, and the intended type sizes of the text.

d. Product Specific Data Report (EPA Form 8580-4).

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[5] If on the Summary Sheet, you commit to develop the data, present arguments that a data requirement is not applicable or should be waived, or submit protocols or modified protocols for Agency review, you must submit a copy of the Summary Sheet (and any supporting information) to the Office of Compliance Monitoring, which will be monitoring the data generated in response to this notice. This submission is in addition to responding to the Product Manager, and should be submitted to the Office of Compliance Monitoring at the address given at the end of this section. (Actual studies are not to be submitted to the Office of Compliance Monitoring.)

3. Within the times set forth in Table A, you must submit to the Registration Division all generic data, unless you are eligible for the formulator's exemption. If for any reason any test is delayed or aborted so that the schedule cannot be met, immediately notify the Product Manager and the Office of Compliance Monitoring of the problem, the reasons for the problem, and your proposed course of action.

B. Manufacturing Use Products containing Parathion in combination with other active ingredients.

1. Within 90 days from receipt of this document, you must submit to the Product Manager in the Registration Division:

a. FIFRA sec. 3(c)(2)(B) Summary Sheet, with appropriate attachments[5] (EPA Form 8580-1).

b. Confidential Statement of Formula (EPA Form 8570-4)

c. Formulator's Exemption Statement if applicable.

2. Within the time frames set forth in Table A, you must submit to the Registration Division all generic data, unless you are eligible for the formulator's exemption. If for any reason any test is delayed or aborted so that the schedule cannot be met, immediately notify the Product Manager and the Office of Compliance Monitoring of the problem, the reasons for the problem, and your proposed course of action.

C. End Use Products containing Parathion as sole active ingredient.

1. Within 90 days from receipt of this document, you must submit to the Product Manager in the Registration Division:

a. FIFRA Section 3(c)(2)(B) Summary Sheet, with appropriate attachments[5] (EPA Form 8580-1).

b. Confidential Statement of Formula (EPA Form 8570-4).

c. Formulator's Exemption Statement if applicable.

2. Within 9 months from receipt of this document you must submit to the Product Manager:

a. Two copies of any product-specific data, if required by Table C.

b. Product Specific Data Report (EPA Form 8580-4), if Table C lists required product-specific data.

c. Three copies of draft labeling, including the container label and any associated supplemental labeling. Labeling should be either typewritten text on 8-1/2 x 11 inch paper or a mockup of the labeling suitable for storage in 8-1/2 x 11 files. The draft labeling must indicate the intended colors of the final label, clear indication of the front panel of the label, and the intended type sizes of the text. End use product labeling must comply specifically with the instructions in Section IV (Regulatory Position and Rationale).

D. Intrastate Products containing Parathion either as sole active ingredient or in combination with other active ingredients.

These products are being called in for full Federal registration. Producers of these products are being sent a letter instructing them how to submit an application for registration.

E. Addresses

The required information must be submitted to the following address:

Dennis Edwards (PM-12)
Registration Division (TS-767C)
Office of Pesticide Programs
Environmental Protection Agency
401 M St., SW
Washington, D.C. 20460

The address for submissions to the Office of Compliance Monitoring is:

Laboratory Data Integrity Program
Office of Compliance Monitoring (EN-342)
Environmental Protection Agency
401 M St., SW
Washington, D.C. 20460.

GUIDE TO TABLES

Tables A, B, and C contain listings of data requirements for the pesticides covered by this Registration Standard.

Table A contains generic data requirements that apply to the pesticide in all products, including data requirements for which a "typical formulation" is the test substance.

Table B contains product-specific data requirements that apply only to a manufacturing use product.

Table C contains product-specific data requirements that apply only to an end use product.

The data tables are generally organized according to the following format:

1. Data Requirement (Column 1). The data requirements are listed in the order in which they appear in 40 CFR Part 158. The reference numbers accompanying each test refer to the test protocols set out in the Pesticide Assessment Guidelines, which are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

2. Test Substance (Column 2). This column lists the composition of the test substance required to be used for the test, as follows:

TGAI = Technical grade of the active ingredient
PAI = Pure active ingredient
PAIRA = Pure active ingredient, radio labeled
TEP = Typical end use formulation
MP = Manufacturing use product
EP = End use product

Any other test substances, such as metabolites, will be specifically named in Column 2 or in footnotes to the table.

3. Use pattern (Column 3). This column indicates the use patterns to which the data requirement applies. Use patterns are the same as those given in 40 CFR Part 158. The following letter designations are used for the given use patterns:

A = Terrestrial, food
B = Terrestrial, non-food
C = Aquatic, food
D = Aquatic, non-food
E = Greenhouse, food
F = Greenhouse, non-food
G = Forestry
H = Domestic outdoor
I = Indoor

Any other designations will be defined in a footnote to the table.

4. Does EPA have data? (Column 4). This column indicates one of three answers:

YES - EPA has data in its files that completely satisfy this data requirement. These data may be cited by other registrants in accordance with data compensation requirements of Part 152, Subpart E.

PARTIALLY - EPA has some data in its files, but such data do not fully satisfy the data requirement. In some cases, the Agency may possess data on one of two required species, or may possess data on one test substance but not all. The term may also indicate that the data available to EPA are incomplete. In this case, when the data are clarified, or additional details of the testing submitted by the original data submitter, the data may be determined to be acceptable. If this is the case, a footnote to the table will usually say so.

NO - EPA either possesses no data which are sufficient to fulfill the data requirement, or the data which EPA does possess are flawed scientifically in a manner that cannot be remedied by clarification or additional information.

5. Bibliographic citation (Column 5). If the Agency has acceptable data in its files, this column lists the identifying number of each study. This normally is the Master Record Identification (MRID) number, but may be a GS number if no MRID number has been assigned. Refer to the Bibliography Appendices for a complete citation of the study.

6. Must additional data be submitted? (Column 6). This column indicates whether the data must be submitted to the Agency. If column 3 indicates that the Agency already has data, this column will usually indicate NO. If column 3 indicates that the Agency has only partial data or no data, this column will usually indicate YES. In some cases, even though the Agency does not have the data, EPA will not require its submission because of the unique characteristics of the chemical; because data on another chemical can be used to fulfill the data requirement; or because the data requirement has been waived or reserved. Any such unusual situations will be explained in a footnote to the table.

7. Timeframe for submission (Column 7). If column 5 requires that data be submitted, this column indicates when the data are to be submitted, based on the issuance date of the Registration Standard. The timeframes are those established either as a result of a previous Data Call-In letter, or standardized timeframes established by PR Notice 85-5 (August 22, 1985).

8. Footnotes (at the end of each table). Self-explanatory.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Guideline Citation and Name of Test	Test Substance[1]/	Guidelines Status	Are Data Required? Yes	No	Data Must Be Submitted Within Timeframes Listed Below[2]/
§158.120 Product Chemistry					
Product Identity:					
61-2 - Description of Beginning Materials and Manufacturing Process	TGAI	R	☒	☐	6 Months
61-3 - Discussion of Formation of Impurities	TGAI	R	☒	☐	6 Months
Analysis and Certification of Product Ingredients					
62-1 - Preliminary Analysis	TGAI	CR	☒	☐	12 Months
Physical and Chemical Characteristics					
63-2 - Color	TGAI	R	☒	☐	6 Months
63-3 - Physical State	TGAI	R	☒	☐	6 Months
63-4 - Odor	TGAI	R	☒	☐	6 Months
63-5 - Melting Point	TGAI	R	☒	☐	6 Months
63-6 - Boiling Point	TGAI	R	☒	☐	6 Months

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TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Guideline Citation and Name of Test	Test Substance[1]	Guidelines Status	Are Data Required? Yes	No	Data Must Be Submitted Within Timeframes Listed Below[2]

Guideline Citation and Name of Test	Test Substance[1]	Guidelines Status	Are Data Required? Yes	No	Data Must Be Submitted Within Timeframes Listed Below[2]
§158.120 Product Chemistry (continued)					
Physical and Chemical Characteristics (continued)					
63-7 - Density, Bulk Density, or Specific Gravity	TGAI	R	☒	☐	6 Months
63-8 - Solubility	TGAI or PAI	R	☒	☐	6 Months
63-9 - Vapor Pressure	PAI	R	☒	☐	6 Months
63-10 - Dissociation constant	PAI	R	☒	☐	6 Months
63-11 - Octanol/water partition coefficient	PAI	R	☒	☐	6 Months
63-12 - pH	TGAI	R	☒	☐	6 Months
63-13 - Stability	TGAI	R	☒	☐	6 Months
Other Requirements:					
64-1 - Submittal of samples	TGAI, PAI	CR	☐	☒	

: :

[1] TGAI = Technical Grade of the Active Ingredient; PAI = Pure Active Ingredient; R = Required; CR = Conditionally Required.

[2] Data must be submitted within the indicated timeframes, which begin on the date of the Guidance Document (see front cover for this date).

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirements	Composition[1]/	Does EPA Have Data To Satisfy This Requirement? (Yes, No, or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes For Data Submission[2]/
§158.125 Residue Chemistry				
171-3 - Directions for Use	--	Yes	GS00155024	No
171-4 - Nature of Residue (Metabolism)				
- Plants	PAIRA	Partially	GS00155001, GS00155002 GS00155003	Yes[3]/
- Livestock	PAIRA and Plant Metabolites	Partially	00057039	Yes[4]/
171-4 - Residue Analytical Method				
- Plant residues	TGAI and Metabolites	Yes	00003724, 00035332, 00046549, 00046550, 00047726, 00101094, 00101095, 00101098, 00101099, 00101118, 00101122, 00101127, 00101167, 00101205, GS00155004, 00101100	No[5]/
- Animal residues	TGAI and Metabolites	Yes	00088048, 00101106, 00101107	No[5]/
171-4 - Storage Stability Data	PAI	Partially	00101166	Yes[6]/
171-4 - Magnitude of the Residue-Residue Studies for each Food Use				
- Root and Tuber Vegetables Group	TEP	Partially	00101095	Yes[7]/

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1]/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[2]/
§158.125 Residue Chemistry (continued)				
171-4 - Magnitude of the Residue - Residue Studies (continued)				
- Leaves of Root and Tuber	TEP	Partially	00101095, 00101163	Yes[8]/
- Bulb Vegetables Group	TEP	No	-	Yes[9]/
- Leafy Vegetables Group	TEP	Partially	00046550, 00101163 00101162, 00101167 GS00155006	Yes[10]/
- Brassica Leafy Vegetables Group	TEP	Partially	00101162, 00101163 00114440, 00046550 00115967	Yes[11]/
- Legume Vegetables Group	TEP	Partially	00044664, 00114438 00114440, GS00155008	Yes[12]/
- Foliage of Legume Vegetables Group		Partially	00044664, 00061199, GS00155008	Yes[13]/
- Fruiting Vegetables Group (Except Cucurbits)	TEP	Partially	00101164	Yes[14]/
- Cucurbit Vegetables Group	TEP	No	-	Yes[15]/
- Citrus Fruits Group	TEP	Partially	00058406, 00101209	Yes[16]/
- Pome Fruits Group	TEP	Partially	00047726, 00114438,	Yes[17]/

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1/]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[2/]
174-4 - Magnitude of the Residue-Residue studies (continued)				
- Stone Fruits Group	TEP	Partially	00114440, 00101204 00047726, 00114438	Yes[18/]
- Small Fruits Group	TEP	Partially	00101206, 00101161	Yes[19/]
- Tree Nut Group	TEP	Partially	00101094	Yes[20/]
- Cereal Grains Group	TEP	Partially	00101226, 00114438, 00114440, 00101114, 00101226, 00101119 00101098, 00101226	Yes[21/]
- Forage, Fodder, and Straw of Cereal Grains Group	TEP	Partially	00061199, 00114440, 00101114, 00101119, 00058046, 00101098, 00101213, 00101226	Yes[22/]
- Grass Forage, Fodder, and Hay Group	TEP	Partially	00101119	Yes[23/]
- Non-Grass Animal Feeds (Forage, Fodder, Straw, and Hay) Group	TEP	Partially	00035332, 00047726, 00061199, 00101111, 00101118, 00101119, 00101121, 00101124	Yes[24/]

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[2]
§158.125 Residue Chemistry (continued)				
174-4 - Magnitude of the Residue-Residue studies (continued)				
- Miscellaneous Commodities				
- Artichoke	TEP	Partially	00051381	Yes[25]
- Avocados	TEP	No	-	Yes[26]
- Cottonseed	TEP	Partially	00101122, 00101226	Yes[27]
- Dates	TEP	No	-	Yes[28]
- Figs	TEP	No	-	Yes[29]
- Hops	TEP	No	-	Yes[30]
- Mangoes	TEP	No	-	Yes[31]
- Okra	TEP	No	-	Yes[32]
- Olives	TEP	Partially	00101108, 00101205	Yes[33]
- Peanuts	TEP	Partially	00046549, 00101111	Yes[34]
- Pineapples	TEP	No	-	Yes[35]

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1]/	Does EPA Have Data To Satisty This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[2]/
§158.125 Residue Chemistry (continued)				
174-4 - Magnitude of the Residue-Residue studies (continued)				
- Miscellaneous Commodities (continued)				
- Rape seed	TEP	Partially	00003724	Yes[36]/ 18 Months
- Safflower	TEP	Yes	00101097	No
- Sugarcane	TEP	Yes	00101099	No
- Sunflower seed	TEP	No	-	Yes[37]/ 18 Months
- Tobacco	TEP	Partially	00114438	Yes[38]/ 18 Months
171-4 - Magnitude of the Residue in Food-producing animals meat, milk, poultry and eggs	TGAI or plant/ animal metabolites	Partially	00088048, 00101104 00101105, 00101106	Reserved[39]/
171-6 - Proposed Tolerance	Residue of Concern	No	-	Yes[40]/ 18 Months
171-13 - Submittal of Analytical Reference Standards	PAIRA	Reserved[41]/	-	-

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

1/ Composition: TGAI = Technical grade of the active ingredient, PAIRA = Pure active ingredient, radiolabelled; TEP = Typical end-use product; EP = End-use product.

2/ These data were required in a 3(c)(2)(B) Notice dated January 28, 1986. The "Chemical Identity" data under Guideline Number 171-2 which was required in the above Notice was included by error. The "Chemical Identity" data are no longer required. The remainder of the residue chemistry data are to be submitted no later than July 28, 1988.

3/ Data are required reflecting the distribution and metabolism of ring-labeled ^{14}C-parathion in cottonseed and cotton forage following foliar treatments, in wheat grain and forage following foliar treatments, and in potatoes following soil and foliar treatments. Application rates must be sufficiently high to permit complete ^{14}C-residue identification. If the metabolism of parathion in these three crops differs significantly, metabolism data for one representative commodity from each crop group for which registered use of parathion exists will be required.

4/ Metabolism studies are required utilizing ruminants and poultry. Animals must be dosed for 3 days with ring-labeled ^{14}C-parathion at a concentration in the total diet which will result in sufficient residues in the tissues, milk, and eggs for characterization. Animals must be sacrificed within 24 hours of the final dose (milk and eggs must be collected twice daily). ^{14}C-Residues must be characterized in muscle, fat, kidney, liver, milk, and eggs.

5/ If additional metabolites of concern are detected in plants and/or if tolerances must be proposed for residues in animal products, additional data may be required.

6/ The storage intervals and conditions of storage of samples of soybeans and lentils used to support the established tolerances for residues in or on dried beans and peas, succulent peas, and soybeans must be submitted. These data must be supported by information depicting the percent decline in residues of parathion at the times and under the conditions specified. The storage conditions of samples used to support the established tolerances for residues in or on mustard seed, safflower seed, sugarcane and sugarcane forage must be submitted. If samples weren't stored frozen, data must be submitted depicting the percent decrease in residues under the conditions specified after 4.5 and 6 months. All residue data requested in this standard must be accompanied by data regarding storage length and conditions of storage of samples analyzed. These data must be accompanied by data depicting the stability of residues under the conditions and for the time intervals specified. On receipt of the above data, the adequacy of the aforementioned tolerances will be reevaluated.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

7/ A group tolerance is not appropriate at the present time because residue data are required for carrots and radishes and additional data are required to support the established tolerances for residues on/in potatoes and sugar beets. Additional residue data are needed to support existing individual tolerances for residues in/on garden beet roots, carrots, potato tubers, radish roots, sugar beet roots, sweet potatoes, and turnip roots.

a. Data are required for parathion residues of concern in or on garden beet roots, from tests reflecting the following treatment regimen:

1. Preplant soil incorporation of G and EC formulations, in separate tests, at 6 lb ai/A; EC formulation must be applied in 20 gal water/A.

2. Multiple foliar applications, in separate tests of 2% D, WP, and EC formulations at 7-day intervals, applied in 1 gal of water/A (WP and EC formulations) by aerial equipment, and in 5 gal of water/A (WP and EC formulations) by ground equipment at 0.8 lb ai/A; a PHI of 15 days must be represented. Studies must be conducted in WI, NY, CA, and TX.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar treatments; the data required above must reflect the proposed number.

b. Data for parathion residues of concern in or on carrots, from tests reflecting the following treatment regimen:

1. Preplant broadcast soil incorporation of the 25% WP or an EC formulation, and the 2% G, in separate tests at 5 lb ai/A. ECs should be applied in 20 gal of water per acre.

2. Application of the an EC at 0.5 lb ai/100 gal of water/A in the furrow at planting.

3. Application of the 2% G at 0.6 ai/A as a postplant soil broadcast treatment.

4. Multiple foliar applications of a D, WP, and EC formulation, in separate tests, at 1 lb ai/A at 7-day intervals (for WP and EC formulations, apply in 1 gal of water/A by aerial equipment, and 5 gal water/A by ground equipment). Tests should reflect a 15-day PHI. Tests must be conducted in CA (including irrigated regions), MI, TX, and WA.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliage and postplant broadcast soil treatments; the data required above must reflect that number.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

c. Data are required depicting parathion residues of concern in or on potato tubers, from tests reflecting the following treatment regimen:

1. Preplant broadcast soil incorporation of the 25% WP or an EC formulation and, in separate tests, a G formulation at 6 lb ai/A.

2. At-plant soil incorporation of the 25% WP or an EC formulation, and in separate tests, a G formulation at 5 lb ai/A.

3. Multiple foliar applications of D, WP, and EC formulations, in separate tests, applied at 7-day intervals at 1 lb ai/A. ULV ground and aerial treatments must be represented.

4. Multiple postplant broadcast soil applications of the 2% G formulation applied at 7-day intervals at 0.8 lb ai/A.
5. A banded sidedress row treatment of a WP formulation to soil at 3 lb ai/A.

Tests must be conducted in ID, ME, ND, and WI. Samples must be collected 5 days after the last treatment (foliar and postplant soil broadcast).

A label restriction must be posed which gives the maximum number of applications allowed per season for foliar and postplant broadcast soil applications; the data required above must reflect that number.

Residues must be determined in granules, chips, and dried potatoes processed from tubers bearing measurable weathered residues. If residues are found to concentrate in any of these processed products, appropriate food additive tolerances must be proposed.

d. Data are required depicting parathion residues of concern on or in radish roots, from tests reflecting the following treatment regimen:

1. Preplant broadcast soil incorporation of the 25% WP formulation at 5 lb ai/A.

2. Multiple postplant soil broadcast applications (at 7-day intervals) of the 2% G at 0.5 lb ai/A.

3. Multiple foliar applications of a D, WP, and EC formulation (in separate tests) at 7-day intervals. For WP and EC formulations, apply in 1 gal of water per acre by aircraft, and in 5 gal of water per acre by ground equipment.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

Tests must be conducted in CA (including irrigated areas), FL, MI, and MN. Samples must be collected 15 days after the last treatment (foliar or postplant soil broadcast).

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar and postplant broadcast soil applications; the data required above must reflect that number.

e. Data are required depicting parathion residues of concern in or on rutabagas, from tests reflecting the following treatment regimen:

1. Preplant broadcast soil incorporation of a G and an EC formulation at 5 lb ai/A and 6 lb ai/A, respectively, in separate tests. EC formulations must be applied in at least 20 gal of water/A.

2. Multiple foliar applications of a D, EC, and the 15% WP formulation, in separate tests, at 0.75 lb ai/A, applied at 7-day intervals (in 1 gal of water/A by aircraft, and in 5 gal of water/A by ground equipment).

Tests must be conducted in MN, WS, and WA. Samples must be collected 7 days after the last foliar treatment.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar applications; the data required above must reflect that number.

f. Data are required depicting parathion residues of concern in or on sugar beet roots, from tests reflecting the following treatment regimen:

1. Preplant broadcast incorporation of an EC formulation, and in separate tests, of a G formulation at 5 lb ai/A.

2. Multiple foliar applications of D, WP, and EC formulations, in separate tests, applied at 7-day intervals at 0.8 lb ai/A. ULV ground and aerial treatments must be represented.

Tests must be conducted in CA, ID, MN, and ND. Samples must be collected 15 days after the last foliar treatment.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

Residues must be determined in dehydrated pulp, molasses, and refined sugar processed from roots bearing measurable weathered residues. If residues are found to concentrate in any of these processed products, appropriate food/feed additive tolerances must be proposed.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliage applications; the data required above must reflect that number.

g. Residues of concern must be determined in or on sweet potatoes harvested 15 days after the last of several foliar applications of an EC formulation at 1 lb ai/A preceded by a preplant broadcast soil incorporated application of an EC at 5 lb ai/A. Both ULV ground and aerial treatments must be represented for foliar treatments. Tests must be conducted in CA, LA, and NC, the major sweet potato production States (Agricultural Statistics, 1983, p. 175).

A label restriction must be prepared limiting the number of permissible foliar applications per season; the data requested above must reflect that number.

h. Data are required depicting parathion residues of concern in and on turnip roots, from tests reflecting the following treatment regimen:

1. Preplant broadcast soil incorporation of an EC or WP formulation of 5 lb ai/A, and in separate tests, a G formulation at 5 lb ai/A. EC formulations must be applied in 20 gal of water per acre by ground equipment.

2. Multiple postplant soil broadcast applications (at 7-day intervals) of the 2% formulation at 0.5 lb ai/A.

3. Multiple foliar applications (at 7-day intervals) of a D, a WP, and an EC formulation (in separate tests) applied at 0.5 lb ai/A, and in separate tests, at 0.25 lb ai/A (WP and EC formulations must be applied in 1 gal of water per acre by aircraft, and in 5 gal of water per acre by ground equipment).

Tests must be conducted in major U.S. turnip production areas. Samples must be collected 7 days after the last foliar application of 0.25 lb ai/A, and 10 days after the last foliar and postplant broadcast soil application at 0.5 lb ai/A.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar and postplant broadcast soil applications; the data required above must reflect that number.

8/ A group tolerance is not appropriate at the present time because additional data are required to support the established tolerances for residues on/in turnip and sugar beet foliage. Additional data are needed to support individual tolerances for residues on/in garden beet, turnip, and sugar beet foliage.

a. Data are required for parathion residues of concern in or on garden beet tops, from tests reflecting the following treatment regimen:

1. Preplant soil incorporation of G and EC formulations, in separate tests, at 6 lb ai/A; EC formulation must be applied in 20 gal of water/A.

2. Multiple foliar applications, in separate tests, of the 2% D, a WP, and an EC formulation at 7-day intervals at 0.8 lb ai/A, (WP and EC formulations applied in 1 gal of water/A by aerial equipment, and in 5 gal of water/A by ground equipment); a PHI of 21 days must be represented.

Studies must be conducted in WI, NY, CA, and TX.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar applications; the data required above must reflect that number.

b. Data are required depicting parathion residues of concern in or on sugar beet tops, from tests reflecting the following treatment regimen:

1. Preplant broadcast incorporation of an EC formulation, and in separate tests, of a G formulation at 5 ai/A.

2. Multiple foliar applications of D, WP, and EC formulations, in separate tests, applied at 7-day intervals at 0.8 lb ai/A. ULV ground and aerial treatments must be represented.

Tests must be conducted in CA, ID, MN, and ND. Samples must be collected 21 days after the last foliar application.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar applications; the data required above must reflect that number.

c. Data are required depicting parathion residues of concern in and on turnip tops, from tests reflecting the following treatment regimen:

1. Preplant broadcast soil incorporation of an EC or WP formulation at 5 lb ai/A, and in separate tests, a G formulation at 5 lb ai/A. EC formulation must be applied in 20 gal of water per acre by ground equipment.

2. Multiple postplant soil broadcast applications (at 7-day intervals) of the 2% G formulation at 0.5 lb ai/A.

3. Multiple foliar applications of a D, a WP, and an EC formulation (in separate tests) applied at 0.5 lb ai/A, and in separate tests, at 0.25 lb ai/A at 7-day intervals (WP and EC formulations must be applied in 1 gal of water per acre by aircraft, and in 5 gal of water per acre by ground equipment).

Tests must be conducted in major U.S turnip production areas CA, TX, GA, OH, and NJ, and include turnips grown in all seasons (spring, summer, fall, and winter). Spring- and summer-grown samples must be collected 7 days after the last foliar application of 0.25 lb ai/A, and 10 days after the last foliar and postplant broadcast soil application of 0.5 lb ai/A. Fall- and winter-grown samples must be collected 21 days after the the last foliar treatment at 0.5 lb ai/A.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar and postplant broadcast soil applications. The data required above must reflect that number.

9/ A crop group tolerance is not appropriate at the present time because data must be submitted for onions (green and bulb) and garlic.

a. Residue data for green and bulb onions harvested 15 days after the last of several (applied at 7-day intervals) ground and aerial foliar applications of, in separate tests, a D, WP, and EC formulation at 0.8 lb ai/A and several postplant broadcast soil applications (at 7-day intervals) of the 2% G at 0.8 lb ai/A. Postplant soil and foliar treatments must be preceded by preplant soil application of a G, and in separate tests, an EC formulation at 6 lb ai/A and by at-plant treatment of a G, and in separate tests, an EC formulation at 2 lb ai/A. Testing must be conducted in CA or TX for spring onions; and CA or OR, CO, ID or WA, and NY for summer onions. ULV ground and aerial foliar treatments must be represented.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

A label restriction must be proposed limiting the number of foliar and postplant broadcast soil applications permitted per season; this number must be reflected in the data requested above.

b. Residue data must be submitted from garlic harvested 15 days after the last of several ground and aerial foliar applications (at 7-day intervals) of, in separate tests, the 2% D, an EC and WP formulation at 0.5 lb ai/A, and several postplant broadcast soil applications (at 7-day intervals) of the 2% G at 0.5 lb ai/A. The tests should take place in CA, and TX or LA.

A label restriction must be proposed limiting the number of foliar and postplant broadcast soil applications permitted per season; this number must be reflected in the data requested above.

10/ A leafy vegetable crop group tolerance is not appropriate at the present time for the following reason:

° Residue data are required for three representative members of this group; celery, leaf and head lettuce, and spinach. Currently tolerances exist for residues in or on celery, lettuce, and spinach.

a. Data reflecting residues of concern in or on celery after multiple foliar applications of a WP, and in separate tests, an EC formulation at 0.25, 0.5, and 1 lb ai/A, the maximum registered rates with samples taken, respectively, at the PHI's of 15, 21, and 30 days; D formulations must be applied similarly at 0.25, 0.5, and 0.75 lb ai/A. In all of these studies a preplant broadcast soil application of an EC at 6 lb ai/A and multiple postplant broadcast soil applications of the 2% G at 7-day intervals ending 30 days prior to harvest at 0.75 lb ai/A must also be included in order to reflect the maximum registered usage throughout the season. Aerial and low volume ground applications of foliar treatments must be represented. Tests are to be conducted in CA, FL, and MI. CA tests must include irrigated regions.

Label restrictions must be proposed limiting the number of foliar and postplant broadcast soil applications permitted per season; the above-requested data must reflect these numbers.

b. Data reflecting residues of concern in or on lettuce after multiple foliar applications.

The residues of concern must be determined in studies providing adequate geographic representation, including CA (including irrigated regions) and any two other States where lettuce is produced commerically, such as AZ, CO, FL, MI, NJ, NM, NY, OH, TX, WA, or WI. Residues of concern must be determined in or on head lettuce after multiple foliar applications at 1-week intervals of 0.5 lb ai/A (sampled at the

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

PHI of 7 days), in or on bibb and leaf lettuce after multiple foliar applications of 0.25 lb ai/A (sampled at the PHI of 14 days), and in or on bibb and leaf lettuce after multiple foliar applications of 0.5 lb ai/A (sampled at the PHI of 21 days). In all of these studies a preplant broadcast application of, in separate tests, a G and EC formulation at 6 lb ai/A and multiple postplant broadcast soil applications of the 2% G at 0.5 lb ai/A ending 30 days prior to harvest should also be included. Foliar application data must include tests using D, EC, and WP formulations; also, aerial applications and low volume ground applications must be represented.

Label restrictions must be proposed limiting the number of foliar and postplant broadcast soil applications permitted each season; the above-requested data must reflect the maximum application numbers proposed.

c. Data are required reflecting residues of concern in or on spinach as a result of multiple foliar applications at one-week intervals of each of one of the D, G, and WP formulations at 0.5 lb ai/A. Residue studies reflecting low volume ground and aerial applications must be represented. These studies must also all include a single preplant broadcast soil application of 6 lb ai/A using an EC, and in separate tests, the 10% G formulation followed by multiple postplant broadcast soil applications (at 7-day intervals) at 0.5 lb ai/A of the 2% G formulation in order to reflect the maximum registered usage throughout the season. Samples must be harvested 14 days after the last application. Tests must be conducted in CA (including irrigated regions), TX, and MD.

A label restriction must be proposed specifying the maximum permissible number of foliar and postplant broadcast applications per season; the data requested above must reflect the proposed number(s).

11/ A Brassica leaf vegetable crop tolerance is not appropriate at the present time for the following reasons:

Additional data are required to support established tolerances for residues in or on broccoli, cabbage, kale (substituted for mustard greens), and kohlrabi.

a. Data depicting the residues of concern in or on mature broccoli subjected to the following treatment regimen: preplant broadcast applications of a G formulation at 5 lb ai/A, and in separate tests, an EC formulation at 6 lb ai/A, followed by, in separate tests, 1) all possible foliar applications using a D, WP, and an EC formulation, made at 7-day intervals at 0.5 lb ai/A, and 2) all possible foliar applications made at 7-day intervals at 1.5 lb ai/A (EC formulation only). The mature broccoli must be harvested 7-days after the last treatment in regimen 1 and 21 days after the last treatment in

§158.125 Residue Chemistry (continued)

regimen 2. At least some of the studies must include aerial and ground ULV applications to determine their effect on residue levels. The studies must be conducted in CA, including irrigated regions.

A label restriction must be proposed limiting the number of permissible foliar applications per season on broccoli, brussels sprouts, and cauliflower; the data requested above must reflect the number proposed.

b. Data are required depicting the residues of concern in or on mature cabbage subjected to the following treatment regimen: preplant broadcast applications of a G at 5 lb ai/A, and in separate tests, an EC formulation at 6 lb ai/A, in combination with, in separate tests, 1) all possible foliar applications made at 7-day intervals at 0.25 lb ai/A using a D, a WP and an EC formulation, 2) all possible foliar applications made at 7-day intervals at 1.5 lb ai/A using an EC formulation, and 3) all possible foliar applications made at 7-day intervals at 1.5 lb ai/A using an EC formulation. The mature plants must be harvested 7-days after the final treatment in regimen 1, 10 days after the last treatment in regimen 2, and 21 days after the final treatment in regimen 3. At least some of the tests should include aerial and ULV applications, to determine their effect on residue levels. Tests must be conducted in CA, FL, TX, and NY.

A label restriction must be proposed limiting the number of permissible foliar applications per season; the data requested above must reflect the number proposed.

c. Data are required depicting the residues of concern in or on mature kale subjected to the following treatment regimen: preplant broadcast application of a G formulation at 5 lb ai/A, and in separate tests, an EC formulation at 6 lb ai/A, followed by, in separate tests, 1) all possible foliar appliations (D, WP, and EC formulations) made at 7-day intervals at 0.25 lb ai/A, and 2) all possible foliar applications (D, WP, and EC formulations) made at 7-day intervals at 0.5 lb ai/A. Tests must also reflect (include) multiple postplant broadcast soil applications at 0.5 lb ai/A ending 10 days prior to harvest. The mature kale must be harvested 7 days after the last foliar treatment in regimen 1, and 10 and 15 days (fall- and winter-grown crops) after the last foliar treatment in regimen 2. At least some of the studies must include aerial and ULV applications. The studies must be conducted in VA, NJ, FL, and TX.

A label restriction must be proposed limiting the number of permissible foliar applications to kale, collards, and mustard greens and the number of permissible postplant broadcast soil applications to kale and mustard greens; the above-requested data must reflect the proposed numbers.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

d. Data are required reflecting residues in or on kohlrabi after the following treatment regimen: foliar applications of an EC formulation made at 7-day intervals at 0.8 lb ai/A, and in separate tests, at 1.5 lb ai/A in conjunction with multiple postplant broadcast soil applications of the 2% G at 0.8 lb ai/A. Ground and aerial ULV foliar applications must be represented in the data submitted. Samples must be collected 7-days after the last foliar treatment at 0.8 lb ai/A, 21 days after the last foliar treatment at 1.5 lb ai/A, and 21 days after the last postplant broadcast soil treatment. Tests must be conducted in major U.S. kohlrabi production areas.

The registrant must propose label restrictions limiting the number of foliar and postplant broadcast soil applications permitted per season; the above-requested data must reflect the numbers proposed.

12/ A legume vegetable crop group tolerance is not appropriate at the present time for the following reasons:

Additional data are required for residues in or on dried lima beans, dried and succulent peas and snap or lima beans.

a. The following data are required for residues in or on dried beans: residues of concern must be determined in or on dried beans following multiple foliar applications made at 7-day intervals of, in separate tests, a D, WP, and an EC formulation at 0.5 and at 0.8 lb ai/A; aerial and ground ULV data must be represented. Samples must be harvested 7 days after the last applications at 0.5 lb ai/A and 15 days after the last application at 0.8 lb ai/A. The tests must include preplant broadcast and at-plant soil applications of an EC at 6 lb ai/A, and in separate tests, a G at 5 lb ai/A. Tests must be conducted in MI, CA, NE, and ID. Separate tolerances must be proposed for residues in or on dried beans.

b. The following data are required for dried and succulent peas: residues of concern must be determined in or on dried and succulent peas following foliar applications, at 7-day intervals of, in separate tests, a D, WP, and an EC formulation at 0.5 lb ai/A; aerial and ground ULV data must be represented. The tests must include a preplant broadcast soil application of the 2% G and in separate tests, an EC at 6 lb ai/A. Samples must be harvested 10 days after the last application. Tests must be conducted in WA and WI. Separate tolerances for residues in or on dried and succulent peas must be proposed.

c. Data are required depicting residues of concern in or on lima or snap beans following foliar applications, at 7-day intervals of, in separate tests, a D, WP and an EC formulation at 0.5 and at 0.8 lb ai/A; aerial and ground ULV data must be represented. Samples must be harvested 7 days after the last application

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

at 0.5 lb ai/A and 15-days after the last application at 0.8 lb ai/A. The tests must include preplant broadcast and at-plant soil applications of an EC at 6 lb ai/A, and in separate tests, a G at 5 lb ai/A. Tests must be conducted in NY, OR, and WI.

Residues must be determined in cannery residue (both dried and snap beans) obtained from beans bearing measurable weathered residues; if residues in cannery residue exceed those found in or on beans, an appropriate feed additive tolerance must be proposed.

A label restriction must be proposed limiting the number of permissible foliar applications per season to beans and peas; the data requested above must reflect that number.
Separate tolerances must be proposed for residues in or on dried, snap, and lima beans and appropriate tolerance revisions (magnitude) for residues in or on snap and lima beans if the data requested indicate tolerance-exceeding residues.

13/ A crop group tolerance for foliage of legume vegetables is not appropriate at the present time for the following reasons:

Additional data or grazing and feeding restrictions are required for bean vines, bean hay, pea straw, pea vines, soybean forage, and soybean hay.

A pregrazing interval must be proposed for pea vines and a tolerance or feeding restriction must be proposed for pea hay.

Tolerances for residues in or on bean vines and hay and a pregrazing interval for vines or feeding and grazing restrictions must be proposed.

A tolerance for residues in or on soybean forage and a pregrazing interval or feeding and grazing restrictions must be proposed for residues in or on soybean forage.

a. Data are required reflecting residues of concern in or on bean vines and hay after multiple foliar applications at 7-day intervals with hay samples taken 7 days after the last treatment at 0.5 lb ai/A and 15 days after the last treatment at 0.8 lb ai/A. Vines must be sampled at intervals following each rate so that a pregrazing interval may be proposed. Studies must represent, in separate tests, foliar applications with D, EC, and WP formulations. These studies must also include a preplant broadcast and at-plant soil application, which must be 6 lb ai/A when an EC formulation is used and

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

5 lb ai/A when a G formulation is used, in order to reflect the maximum registered usage throughout the season. Aerial applications and low-volume ground applications of foliar treatments must be represented. Studies must be conducted in NY, OR, and WI for succulent beans and CA, ID, MI, and NE. Tolerances for residues in or on bean vines and hay and a pregrazing restriction for bean vines must be proposed; alternatively, the registrant may propose feeding and grazing restrictions.

b. Data are required depicting residues of concern in or on pea straw collected 15 days after multiple foliar applications (at 7-day intervals) of, in separate tests, a D, WP, and an EC formulation at 0.5 lb ai/A. Ground and aerial ULV applications must be represented. Tests must include a preplant broadcast soil application of an EC, and in separate tests, the 2% G formulation at 6 lb ai/A. Vines must be collected at intervals following the last foliar treatment so that a pregrazing interval may be proposed. Tests must be conducted in WA and WI. A tolerance must be proposed for residues in or on pea straw; alternatively, a feeding restriction may be posed. A pregrazing restriction must be proposed for vines. (Note that the above are not required if tolerances are proposed and fill data requirements for bean vines and hay; the bean data will be translated to peas.)

c. Data are required reflecting residues of concern in or on soybean hay and in or on soybean forage after multiple foliar applications at 7-day intervals at 0.8 lb ai/A of an EC formulation. Hay must be harvested 20 days after the last treatment; forage must be harvested in intervals after the last treatment so that a pregrazing interval may be proposed. These studies must also include a preplant broadcast soil application at 4 lb ai/A using an EC, and in separate tests, a G formulation and multiple postplant-directed soil applications at 1.5 lb ai/A using an EC, formulation, in order to reflect the maximum registered use throughout the season. Aerial and low-volume ground applications of foliar treatments must be included. Studies must be conducted in IL, MN, and GA. A tolerance for residues in or on soybean forage and a pregrazing interval must be proposed; alternatively, feeding and grazing restrictions may be proposed and data submitted for soybean hay only.

14/ A crop group tolerance for the fruiting vegetables (except cucurbits) is not appropriate at the present time for the following reasons:

Residue data are required for peppers and tomatoes.

a. Residues must be determined in or on peppers harvested 15 days after the last of several foliar applications of, in separate tests, a D, WP, and an EC formulation at 0.8 lb ai/A; ground and aerial ULV application must be represented in the data provided. Tests must include a preplant broadcast soil treatment of, in separate tests, a G, and an EC or the 25% WP at 6 lb ai/A and several postplant broadcast soil applications of the 2% G at 0.8 lb ai/A. Tests must be conducted in CA, FL, TX, and NJ.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

b. Residue data are required from tomatoes harvested 10 days after the last of several foliar applications (at 7 intervals) of, in separate tests, the 25% WP, an EC, and a D formulation at 1 lb ai/A using ground, aerial, and ULV equipment (separate tests); tests must include both preplant and at-plant broadcast applications each at 6 lb ai/A of a G and an EC or the 25% WP formulation; and multiple postplant broadcast soil applications of the 2% G formulation at 0.8 lb ai/A. These tests are to be conducted in CA, FL, and OH.

Residue data are required from processed tomato products, including wet pomace, dried pomace, puree, catsup, and juice, processed from tomatoes bearing measurable weathered residues. Appropriate food/feed additive tolerances must be proposed should concentration of residues occur in processed products.

Label restrictions must be proposed limiting the number of permissible foliar and postplant broadcast soil applications to tomatoes, peppers, and eggplant per season; the data requested above must reflect the numbers proposed.

15/ A crop group tolerance for the cucurbit vegetables is not appropriate at the present time for the following reasons:

Residue data must be submitted for cucumbers and melons, the representative commodities.

a. Residue data are required from cucumbers harvested 15 days after the last of several foliar applications (at 7-day intervals) of, in separate tests, a D, WP, and an EC at 0.5 lb ai/A. Tests must reflect application by ground, aerial, and ULV equipment. Preplant broadcast soil application of a G, and in separate tests, an EC formulation at 4 lb ai/A; and several postplant broadcast soil applications of the 2% G at 0.5 lb ai/A must be included with foliar application data. These tests must be conducted in MI and FL.

Label restrictions must be proposed limiting the number of permissible foliar and postplant broadcast soil applications per season to cucumbers; the data requested above must reflect that number.

b. Residue data are required from melons harvested 7 days after the last of several foliar applications (at 7 day intervals) of, in separate tests, a D, WP, and an EC formulation at 0.5 lb ai/A by ground, aerial and ULV equipment (separate tests). These data should also reflect a preplant broadcast soil application of a G at 5 lb ai/A, and in separate tests, an EC at 6 lb ai/A. The tests are to be conducted in CA, TX, and AZ.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

A Label restriction must be proposed limiting the number of permissible foliar applications to melons and pumpkins per season; the data requested above must reflect that number.

c. Residue data must be submitted for summer squash (a representative commodity) harvested 15 days after the last of several foliar treatments (at 7-day intervals) using, in separate tests, a D, WP, and an EC formulation at 0.5 lb ai/A by ground, aerial, and ULV equipment. Tests must include several postplant broadcast soil applications of the 2% G at 0.5 lb ai/A, and a preplant broadcast soil application of the 25% WP at 5 lb ai/A. These tests must be conducted in FL, CA, TX, and NY.

Label restrictions must be proposed limiting the number of foliar and postplant broacast soil applications permitted per season to summer squash; the data requested above must reflect that number.

d. Residues must be determined in or on winter squash harvested 15 days after the last of several foliar applications of, in separate tests, a D, WP, and an EC formulation at 0.5 lb ai/A; ground and aerial ULV applications must be represented in the data provided. Tests must include a preplant broadcast soil application of the 25% WP at 5 lb ai/A and several postplant broadcast soil applications of the 2% G at 0.5 lb ai/A. Tests must be conducted in FL, CA, TX, and NY.

Label restrictions must be proposed limiting the number of foliar and postplant broadcast soil applications permitted per season; the data requested must reflect the numbers proposed.

16/ A group tolerance for citrus fruits is not appropriate because additional data are required as follows:

Data are required depicting the residues of concern in or on oranges, grapefruit, and lemons harvested at maturity after the following foliar treatment regimens: (1) three applications at 4 lb ai/A with the 2% D using, in separate tests, aerial and ground equipment; (2) three applications (ground) at 2 lb ai/100 gal, mixed with and without petroleum distillate (separate tests), using the 25% WP; (3) three applications, beginning at petal fall, of an EC at 2 lb ai/100 gal (ground); and (4) three aerial (ULV) applications of an EC at 10 lb ai/A. Regimens listed in (1), (2), and (4) must be tested in CA and FL, and regimens in (3) must be conducted in CA. Lemon data are required from CA only. In tests where < 4 lb ai/A is applied, mature fruit must be harvested 14 days after the last treatment. In tests where > 4 lb ai/A is applied, fruit must be sampled 30 days after the final treatment.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

Data are required depicting the residues of concern in dried pulp, oil, molasses and juice, processed from citrus bearing measurable, weathered residues. Should residues concentrate in any processed commodity, appropriate food/feed additive tolerances must be proposed.

17/ A crop group tolerance for the pome fruits group is not appropriate at the present time for the following reasons:

Residue data must be submitted for apples (refer to the Apple section for details). Additional residue data are needed for pears.

a. Data are required depicting residues in or on pears harvested 14 days after the last foliar treatment in the following treatment regimens (separate tests) must be submitted: (1) multiple ground, and in separate tests, aerial applications of a D formulation at 1.5 lb ai/A; (2) multiple applications of a WP, and in separate tests, an EC formulation at 0.5 lb ai/100 gal; and (3) multiple ULV aerial, and in separate tests, low-volume ground applications of an EC formulation at 3.5 lb ai/A. Tests must be conducted in WA and CA.

b. Residue data are required from apples harvested 14 days after the last of repeated seasonal foliar applications at 7-day intervals) beginning at prebloom using, in separate tests, an EC formulation at 2 lb ai/100 gal (high-volume ground) an EC at 6 lb ai/A (ULV aerial and low-volume ground, in separate tests), and a D at 4 lb ai/A (aerial and ground, in separate tests). Tests must be conducted in WA or NY.

Residue data are required from wet pomace, dried pomace, and juice, processed from apples bearing measurable weathered residues. Appropriate food/feed additive tolerances must be proposed should concentration of residues occur in processed products.

A label restriction must be proposed limiting the number of permissible foliar treatments per season to apples, pears, and quinces; the data requested above must reflect that number.

18/ A crop group tolerance for stone fruits group is not appropriate at the present time for the following reasons:

Additional residue data are required for apricots and plums/fresh prunes. Apricots are being substituted for peaches as the representative commodity in this case because the registered uses on apricots are more severe.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

a. Residues must be determined in or on sweet and sour cherries harvested 14 days after the following foliar treatment regimens (in separate tests): (1) multiple ground, and in separate tests, aerial treatments of the 2% D formulation at 2 lb ai/A; (2) multiple applications of the 25% WP at 2 lb ai/A using both ULV aerial, and in separate tests, low-volume ground equipment, and (3) multiple treatments of a WP and, in separate tests, an EC at 0.5 lb ai/100 gal. Tests must be conducted in MI (sweet and sour varieties, CA (sweet only), and WA (sweet only).

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar applications to sweet and sour cherries; the data required above must reflect that number.

b. Data are required depicting parathion residues of concern in and on apricots harvested 14 days after the last treatment of the following foliar treatment regimens (in separate tests): (1) Multiple foliar applications, at 7-day intervals, of the 2% D formulation at 2 lb ai/A, applied by aerial and ground equipment, in separate tests; (2) multiple foliar applications of an EC formulation at 0.67 lb ai/100 gal; and (3) multiple ULV aerial, and in separate tests, low-volume ground applications of the 25% WP and an EC (in separate tests) at 3 lb ai/A. Tests must be conducted in CA, UT, and WA.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar applications to apricots, nectarines, and peaches; the data required above must reflect that number.

c. Data are required concerning parathion residues of concern on and in plums and fresh prunes, harvested 14 days after the last treatment in studies reflecting the following foliar treatment regimens: (1) multiple foliar applications of a WP, and in separate studies, an EC formulation at 0.5 lb ai/100 gal; and (2) multiple foliar applications of an EC at 4 lb ai/A in at least 5 gal of water per acre by aircraft, and in separate tests, in 20 gal of water per acre by low-volume ground equipment. Tests must be conducted in CA, OR, WA, and ID.

Residues must be determined in prunes processed from plums bearing measurable weathered residues. If residue are found to concentrate in prunes, an appropriate food additive tolerance must be proposed.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar use on plums; the data required above must reflect that number.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

19/ A crop group tolerance for the small fruits is not appropriate at the present time for the following reasons:

Residue data are required to support the established tolerances for residues of parathion in or on the representative crops, blackberries, cranberries, gooseberries (substituting for blueberries), grapes, and strawberries.

a. Data are required reflecting residues of concern in or on blackberries harvested 15 days after the last of several foliar applications, at 7-day intervals, from the following individual treatment regimens: (1) aerial, and in separate tests, ground applications of a D formulation at 0.8 lb ai/A; (2) ULV aerial and, in separate tests, low-volume ground applications of the 25% WP, and in separate tests, an EC formulation at 1 lb ai/A; and (3) ground applications of an EC at 1 lb ai/100 gal. Studies must be conducted in CA, MI, OR, and TX.

   Label restrictions must be proposed limiting the number of foliar applications permitted per season to blackberries, boysenberries, dewberries, loganberries, and raspberries; the above-requested data must reflect these numbers.

b. Data are required depicting residues of or on cranberries collected after the following individual foliar treatment regimens: (1) multiple ground applications of a D formulation at 1 lb ai/A with samples collected 30 days after the last treatment; (2) multiple aerial applications of a D formulation at 1 lb ai/A with samples collected 30 days after the last treatment; (3) multiple ground applications of a D formulation at 0.8 lb ai/A with samples collected 15 days after the last treatment; (4) multiple ULV aerial applications of an EC formulation at 1 lb ai/A with samples collected 30 days after the last treatment; (5) multiple low-volume ground applications of an EC formulation at 1 lb ai/A with samples collected 30 days after the last treatment; (6) multiple ULV aerial applications of an EC formulation at 0.8 lb ai/A with samples collected 15 days after the last treatment; (7) multiple low-volume ground applications of an EC formulation at 0.8 lb ai/A with samples collected 15 days after the last treatment; and (8) multiple ground applications of an EC formulation at 1 lb ai/100 gal with samples collected 15 days after treatments at 0.8 lb ai/A (80 gal) and 30 days after treatments at 1 lb ai/A (100 gal). Studies must be conducted in MA and WI.

   Label restrictions must be proposed limiting the number of foliar applications permitted per season; the above-requested data must reflect these numbers.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

c. Data are required reflecting residues in or on gooseberries collected 15 days after the following individual foliar treatment regimens: (1) multiple aerial, and in separate tests, ground applications of the 2% D formulation at 0.6 lb ai/A; (2) multiple ULV aerial, and in separate tests, low-volume ground applications of an EC at 0.8 lb ai/A; and (3) multiple ground applications of an EC at 0.67 lb ai/100 gal. Tests must be conducted in MI, CA, and WA.

A label restriction must be proposed limiting the number of permissible foliar applications to gooseberries, blueberries, and currants; the data requested above must reflect the number proposed.

d. Residues must be determined in grapes harvested 14 days after the last foliar treatment in the following individual treatment regimens: (1) multiple D formulations applied aerially, and in separate tests, by ground equipment at 1.5 lb ai/A; (2) multiple applications of a WP, and in separate tests, an EC formulation, at 1 lb ai/100 gal; (3) multiple ULV aerial, and in separate tests, low-volume ground applications of an EC, and in separate tests, the 25% WP formulation at 1.5 lb ai/A. Prior to the time when fruit is the size of a buckshot, the rate given above in (3) must be 2.5 lb ai/A. Studies must be conducted in CA, and one other State with significant grape production such as AZ, AR, MI, NY, PA, or WA.

A label restriction must be proposed limiting the number of foliar applications permitted per season; the above-requested data must reflect these numbers.

Data are required reflecting residues of concern in the processed products of grapes. Residue data should be obtained from raisins, raisin waste, juice, wet pomace, and dried pomace, all processed from grapes bearing measurable weathered residues. If residues concentrate in any of these processed products, appropriate food/feed additive tolerances must be proposed.

e. Data are required reflecting the residues of concern in or on mature strawberries 14 days after the last of foliar applications in the following individual treatment regimens: (1) an EC, and in separate tests, the 25% WP formulation at 0.8 lb ai/A; ULV aerial and low-volume ground applications must be included in separate tests; and (2) high-volume ground applications of an EC at 0.8 lb ai/100 gal. All studies must also include a preplant soil application of 5 lb ai/A of an EC formulation, and in separate tests in organic soils in FL, a 10% G formulation; these applications are required in order to reflect the maximum registered usage throughout the growing season. Studies must be conducted in CA, FL, and OR.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

Label restrictions must be proposed limiting the number of foliar applications permitted per season; the above requested data must reflect this number.

20/ A crop group tolerance for the tree nuts is not appropriate at the present time for the following reason:

Additional data are required to support the established tolerances for residues in or on almonds, pecans and walnuts.

a. Residue data are required from almonds (nutmeat and hulls) harvested after the following individual multiple treatment regimens: (1) application of the 25% WP, and in separate tests, an EC formulation at 2.5 lb ai/A using (separate tests) low-volume ground and ULV aerial equipment; (2) high-volume application of the 25% WP, and in separate tests, in EC at 0.5 lb ai/100 gal; and (3) ground, and in separate tests, aerial application of the 2% D formulation at 2.6 lb ai/A. These tests must be initiated at bloom and continue at 7-day intervals until hulls open. Tests must be conducted in CA.

A label restriction must be proposed limiting the number of foliar applications permitted per season to almonds and filberts; this number must be reflected in the data requested above.

b. Residue data are required from pecans harvested after the last of the following individual multiple foliar treatment regimens: (1) the WP, and in separate tests, an EC at 1 lb ai/100 gal; and (2) low-volume ground, and, in separate tests, ULV aerial applications of the 25% WP at 2.5 lb ai/A. Mature pecan samples must be harvested 15 days after the last treatment. Tests must be conducted in GA and NM.

A label restriction must be proposed limiting the number of foliar applications permitted per season; this number must be reflected in the data requested above.

c. Residue data are required from walnuts harvested after the following individual multiple foliar treatment regimens: (1) low-volume ground, and in separate tests, ULV aerial applications of an EC at 10 lb ai/A; and (2) high-volume ground applications of an EC formulation at 3 lb ai/100 gal. Applications must be repeated at 7-day intervals until husks open; mature walnut samples must be collected and analyzed. These tests must be conducted in CA.

A Label restriction must be proposed limiting the number of permissible seasonal foliar treatments; the data requested above must reflect the number proposed.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

21/ A crop group tolerance for cereal grains is not appropriate at the present time for the following reasons:

Additional data are needed to support the established tolerances for corn (fresh sweet/dried field), rice, sorghum (refer to the individual crop sections for details). No residue data have been submitted for wheat.

Separate tolerances must be proposed for residues in or on field corn grain and sweet corn (sweet kernels plus cob with husks removed). Tolerance must be proposed for residues in or on oat hulls.

a. Data are required depicting parathion residues of concern in or on field corn grain and in or on sweet corn (kernels plus cob with husks removed) from tests reflecting the following treatment regimen:

    1. Preplant soil broadcast application of an EC formulation and, in separate tests, a G formulation at 6 lb ai/A.

    2. At-plant soil incorporation of an EC and, in separate tests, a G formulation at 3 lb ai/A.

    3. At-cultivation banded soil application of a G and, in separate tests, an EC at 1.5 ai/A.

    4. Multiple postplant soil broadcast applications of the 2% G formulation at 0.8 lb ai/A.

    5. Multiple foliar applications of, in separate tests, a WP, a D, and an EC formulation at 1 lb ai/A, applied at 5-day intervals; tests must include, in separate tests, both aerial and ground treatments, including the use of ULV equipment for the WP and EC formulations.

Field corn tests must be conducted in the States of IL, MN, NE, and OH. Sweet corn tests must be conducted in the states of FL, NY, WI, and WA. Samples must be collected 12 days after the final treatments (foliar and postplant soil broadcast).

Separate tolerances must be proposed for residues of parathion in or on field corn grain and sweet corn (kernels plus cob with husks removed).

Residues must be determined in crude and refined oil and milling products, processed from field corn grain bearing measurably weathered residues. If residues are found to concentrate in any of these

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

processed products, appropriate food additive tolerances must be proposed.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar and postplant broadcast soil applications; the data required above must reflect that number.

b. Data are required depicting parathion residues of concern in and on oat grain and hulls, from tests reflecting following multiple foliar application regimens (at 7-day intervals): (1) a D formulation applied by air, and in separate tests, by ground equipment at 0.75 lb ai/A; and (2) a WP, and in separate tests, an EC formulation to be applied in 1 gal of water/A by aerial equipment, and (in separate tests) in 2 gal of water/A by ground equipment at 0.75 lb ai/A. Tests must be conducted in IA, SD, TX, and WI. Samples must be collected 15 days after the last application. A tolerance for residues in or on oat hulls must be proposed.

Residues must be determined in milling products processed from oats bearing measurable weathered residues. If residues are found to concentrate, an appropriate food additive tolerance must be proposed.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar applications; the data required above must reflect that number.

c. Data are required depicting parathion residues of concern in and on rice grain, from tests reflecting multiple foliar applications, at 7-day intervals, of a G and (in separate tests) an EC formulation at 0.1 lb ai/A; ECs must be applied in 8 gal of water/A by air, and (in separate tests) in 20 gal of water/A by ground equipment. Tests must be conducted in LA, CA, and TX. Samples must be collected 1 day after the last foliar application.

Residues must be determined in polished rice, hulls, and millings processed from rice bearing measurable weathered residues. If residues are found to concentrate in any of these processed products, appropriate food and feed additive tolerances must be proposed.

A label restriction must be proposed which gives the maximum number of applications allowed per season for foliar applications; the data required above must reflect that number.

d. Data are required depicting parathion residues of concern in or on sorghum grain, from tests reflecting foliar applications of the 25% WP, and in separate tests, an EC formulation, applied (at 7-day intervals) at 1 lb ai/A in 1 gal of water/A by aircraft, and (in separate tests) in 5 gal of water/A by ground

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

equipment; and (2) multiple foliar applications of the 10% G formulation, applied by air at 7-day intervals at 0.5 lb ai/A. Tests must be conducted in KS and TX. Samples must be collected 12 days after the last treatment.

Residues must be determined in syrup, flour, and milled products processed from sorghum bearing measurable weathered residues. If residues are found to concentrate in any of these processed products, appropriate food additive tolerances must be proposed.

The registrant must propose a label restriction for the 25% WP, 10% G, and 2-8 lb/gal EC formulations which gives the maximum number of applications allowed per season for foliar applications; the data required above must reflect that number.

22/ A crop group tolerance for forage, fodder, and straw of cereal grains is not appropriate at the present time, for the following reasons:

Tolerances have not been established for residues in or on: forage, fodder, or hay of wheat, barley, or oats; straw of rice; fodder or silage of corn, or silage of sorghum. Tolerances for residues in or on wheat, barley and oat straw, hay and forage and a pregrazing interval (wheat only) or feeding and grazing restrictions must be proposed.

Additional data are required to support the established tolerances for residues in or on sorghum forage and fodder, and corn forage.

A tolerance must be proposed and established for residues in or on sorghum silage or a feeding restriction must be proposed.

A tolerance for residues in or on rice straw or a feeding restriction must be proposed.

Tolerances for residues in or on corn fodder and silage and a pregrazing interval for corn forage must be proposed.

Additional data are required depicting parathion residues of concern in and on corn forage, fodder, and silage, from tests reflecting the following treatment regimen:

1. Preplant soil broadcast application of an EC formulation and, in separate tests, a G formulation at 6 lb ai/A.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

2. At-plant soil incorporation of an EC and, in separate tests, a G formulation at 3 lb ai/A.

3. At-cultivation banded soil application of a G and, in separate tests, an EC at 1.5 ai/A.

4. Multiple postplant soil broadcast applications of the 2% G formulation at 0.8 lb ai/A.

5. Multiple foliar applications of, in separate tests, a D, a WP, and an EC formulation at 1 lb ai/A, applied at 5-day intervals, tests must include, in separate tests, both aerial and ground treatments, including the use of ULV equipment for the WP and EC formulations.

Field corn tests must be conducted in the States of IL, MN, NE, and OH, and sweet corn tests must be conducted in FL, NY, WI, and WA. Samples for silage and of fodder must be collected 12 days after the final treatment (foliar or postplant soil broadcast); samples of forage must be collected at intervals following the last treatment so that a pregrazing interval may be proposed. Tolerances must be proposed for residues in or on fodder and silage; a pregrazing interval must be proposed for forage.

b. Data are required depicting parathion residues of concern in and on oat forage, hay and straw, from tests reflecting the following multiple foliar application regimens (at 7-day intervals): (1) a D formulation applied by air and, in separate tests, by ground equipment at 0.75 lb ai/A; and (2) a WP, and in separate tests, and EC formulation to be applied in 1 gal of water/A by aerial equipment, and (in separate tests) in 2 gal of water/A by ground equipment at 0.75 lb ai/A. Tests must be conducted in IA, SD, TX, and WI. Samples of hay and straw and forage must be collected 15 days after the last application. Tolerances must be proposed for residues in or on oat hay, straw, and forage; alternatively, feeding and grazing restrictions may be proposed.

c. Data are required depicting parathion residues of concern in and on rice straw, from tests reflecting multiple foliar applications, at 7-day intervals, of a G and (in separate tests) an EC formulation at 0.1 lb ai/A; ECs must be applied in 8 gal of water/A by air, and (in separate tests) in 20 gal of water/A by ground equipment. Tests must be conducted in LA, CA, and TX. Samples must be collected 1 day after the last foliar application.

d. Data are required depicting parathion residues of concern in and on sorghum fodder and forage for foliar applications of 0.25-0.5 lb ai/A, repeating as necessary; and foliar application of 0.5 lb ai/A, beginning when about 10% of plants are blooming and repeating at 5 to 7 day intervals until 80-90% of plants have bloomed.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

23/ A group tolerance for the grass forage, fodder, and hay group is not appropriate for the following reasons:

A tolerance must be proposed for residues in or on grass hay.

Residue data are required from grass forage harvested 7 days after the last of several foliar applications of EC formulation at 0.75 lb ai/A using, in separate tests, low volume ground and aerial equipment, and high volume ground equipment. These tests must include treatments with the 4% G as a broadcast soil application at 1 lb ai/A, at 7-day intervals. Tests must be conducted in States representative of southern, northeastern, midwestern areas of the U.S. In addition, multiple applications must be made to irrigated pasture, using 0.1 lb ai/A of the 2% G formulation for broadcast applications, and in the same test, using a 2 to 8 lb/gal EC for foliar applications at 0.1 lb ai/A. The foliar application must be conducted using aerial and low- and high-volume ground equipment. Samples must be collected 7 days after the last treatment. These tests must be conducted in the Southwest, where pastures would most likely be irrigated. All tests must utilize the representative crops for the Grass Forage and Hay Crop Group: bermuda grass, bluegrass, and bromegrass of fescue.

Residue data, and a tolerance supported by such data for hay grown under the above requested regimen are required.

A label restriction must be proposed limiting the number of foliar applications permitted per season; this number must be reflected in the data requested above.

24/ A crop group tolerance for the nongrass animal feeds is not appropriate at the present time for the following reasons:

Additional residue data are required for clover and alfalfa, representative crops.

Tolerances must be proposed for residues in or on clover and vetch hay.

A tolerance must be proposed for residues in or on alfalfa seed.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

a. The following residue data are required for clover: Data reflecting the residues of concern in or on clover forage and hay, sampled 15 days after the last of multiple foliar applications of (in separate tests) D, EC, and WP formulations at 0.8 lb ai/A, made at 7-day intervals. These foliar applications should be used in conjunction with broadcast soil applications of a G formulation at 0.6 lb ai/A. Aerial and low-volume ground applications must be represented. Tests must be conducted in MO, NY, OH, PA, and WI.

b. Data reflecting residues of concern in or on alfalfa forage, hay, and seed 15 days after the last of multiple foliar applications of (in separate tests) D, EC, and WP formulations at 0.8 lb ai/A, made at 7-day intervals. These foliar applications should be used in conjunction with several broadcast soil applications of a G formulation at 0.6 lb ai/A.. Aerial and low-volume ground foliar applications must be represented. In crops grown for seed, unless a 15-day PHI and pregrazing interval are proposed, residues must be determined at several time intervals beginning immediately after the last application. Tests must be conducted in CA, IA, MN, NE, SD, and WI. A tolerance for residues in or on alfalfa seed must be proposed.

Data reflecting residues in or on meal processed from alfalfa hay bearing measurable weathered residues. If residues concentrate during meal production, a feed additive tolerance must be proposed.

A label restriction must be proposed limiting the number of foliar and postplant broadcast soil applications permitted per season to alfalfa, clover and vetch; the above-requested data must reflect these numbers.

25/ Residue data are required from artichokes harvested 7 days after the last of several foliar applications of the 25% WP and an EC formulation (separate tests) at 1 lb ai/A, using aerial and high and low volume ground equipment (separate tests). These tests must include use of the 25% WP at 5 lb ai/A as preplant broadcast soil application. Tests must be conducted in CA.

A label restriction must be proposed limiting the number of foliar applications per season; this number must be reflected in the data requested above.

26/ Data are required depicting the residues of concern in or on mature avocados 21 days after the last treatment in each of the following foliar treatment regimes (separate tests): (1) all possible ground applications made at 7-day intervals using the 25% WP at 0.625 lb ai/100 gal; and (2) all possible aerial and ground applications, in separate tests, made at 7-day intervals using the 4 lb/gal EC at 2.5 lb ai/A (low-volume applications). The applications should be made with petroleum distillate. The tests must be conducted in CA and FL.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

A label restriction must be proposed limiting the number of foliar applications permitted per season; The data requested above must reflect that number.

27/ Data are required depicting the residues of concern in or on cotton forage harvested at intervals after, and mature cottonseed samples harvested 7 days after the last of several foliar applications of, in separate tests, a D formulation at 1.2 lb ai/A, a WP formulation at 1 lb ai/A and an EC formulation at 1.25 lb ai/A, using ground equipment. Applications must be made 7 days apart. Tests must be conducted in TX, CA, and MS. A tolerance for residues in or on cotton forage and a pregrazing interval must be proposed; alternatively, a feeding restriction may be proposed.

Data depicting the residues of concern in or on cottonseed processed products, including meal, hulls, soapstock, and crude and refined oil, processed from cottonseed bearing measurable, weathered residues. Should residues concentrate in processed products, appropriate food/feed additive tolerances must be proposed.

A label restriction must be proposed limiting the number of foliar applications permitted per season; the data requested above must reflect that number.

28/ Data are required depicting the residues of concern in or on mature dates harvested 21 days after multiple foliar applications of an EC at 0.75 lb ai/A, at 7-day intervals until the PHI. The tests must be conducted in CA.

A label restriction must be proposed limiting the number of foliar applications permitted per season; the data requested above must reflect that number.

29/ Data are required depicting the residues of concern in or on mature figs harvested 30 days following the foliar treatment in the following treatment regimen: a single dormant application of the 25% WP at 0.5 lb ai/100 gal, made late in the dormant period with petroleum distillate, followed by a foliar application of an EC (mixed with petroleum distillate) made in June at 1.25 lb ai/100 gal. Separate tests of foliar applications of the 25% WP at 2.5 lb ai/A and of an EC at 2 lb ai/A; low-volume ground and ULV aerial applications, in separate tests, must be made. The tests must be conducted in CA.

Data depicting the residues of concern in dried figs processed from fresh figs bearing measurable, weathered residues. Exaggerated rates may be necessary to achieve such initial residue levels. Should residues concentrate upon drying, an appropriate food additive tolerance must be proposed.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

30/ Data are required depicting the residues of concern in or on mature hops harvested 15 days after the last of all appropriate foliar applications, at 7-day intervals, of a D and an EC formulation (separate tests) at 0.8 lb ai/A, including low-volume and aerial tests to determine their effect on residue levels. The tests must be conducted in WA and CA.

Data are required depicting the residues of concern in the processed products of hops, dried hops and spent hops, processed from hops bearing measurable, weathered residues. Exaggerated application rates may be necessary to achieve such initial residue levels. Should concentration of residues occur in the processed products, appropriate food/feed additive tolerances must be proposed.

A label restriction must be proposed limiting the number of permissible foliar applications per season; the data requested above must reflect that number.

31/ Data are required depicting the residues of concern in or on mature mangoes harvested 21 days after the last of all appropriate foliar applications with an EC formulation at 0.5 lb ai/100 gal. The tests must include aerial and low-volume applications to determine their effect on residue levels. The tests must be conducted in FL and HI.

A label restriction must be proposed limiting the number of foliar applications permitted per season; the data requested above must reflect that number.

32/ Data are required depicting the residues of concern in or on okra harvested 21 days after the last of seven applications at 7-day intervals of the 25% WP and an EC formulation (separate tests) at 0.75 lb ai/A using high- and low-volume ground equipment and aerial equipment (separate tests). Each of the above requested tests must be conducted in conjunction with several postplant broadcast soil applications of the 2% G at 0.75 lb ai/A. These tests must be conducted in GA and TX.

A label restriction must be proposed limiting the number of foliar applications permitted per season; this number must be reflected in the data requested above.

33/ Residue data are required from olives harvested 6 weeks after the last of several foliar applications by aerial, and low-volume ground equipment of an EC formulation at 5% lb ai/A. In addition, tests must be conducted using high-volume ground application of an EC formulation at 0.8 lb ai/100 gal, to be applied until runoff. These tests must be conducted in CA, and reflect multiple foliar treatments in late May

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

to early June, and from mid-June to August 1. An implicit PHI of 6 weeks is in effect, reflecting the interval between last date of application (August 1) to harvest (beginning in late September). Alternatively, registrant may propose a PHI and submit data reflecting the proposed PHI in the above-requested data.

Residue data are required from olive oil made from olives bearing measurable, weathered residues, to determine the concentration of residues in olive oil upon processing. If the above-requested data indicate that residues concentrate upon processing, an appropriate food additive tolerance must be proposed.

A label restriction must be proposed limiting the number of foliar applications permitted per season; this number must be reflected in the data requested above.

34/ Data are required depicting the residues of concern in or on peanuts, peanut hulls, vines, and hay harvested 15 days following the last treatment in the following treatment regime: (1) a preplant broadcast incorporated soil application at 2 lb ai/A with the 10% G formulation; (2) an at-pegging application at 3 lb ai/A using the 10% G formulation and, in separate tests, at 2.6 lb ai/A using an EC formulation; (3) a postpegging application (banded over row, incorporated) at 2.67 lb ai/A using the 10% G formulation; (4) multiple foliar applications at 0.8 lb ai/A with an EC formulation; and (v) multiple directed applications to the base of plants and the soil surface at 0.5 lb ai/A using an EC formulation. Foliar tests must include evaluation of aerial applications. The tests must be conducted in GA, VA, TX, and FL. Tolerances must be proposed for residues in or on hulls, vines, and hay; as an alternative to submission of data and tolerance proposals for residues in or on vines and hay, feeding restrictions may be proposed.

Data are required depicting the residues of concern in or on meal, soapstock, crude oil, and refined oil, processed from peanuts bearing measurable, weathered residues. Exaggerated rates may be required to achieve such initial residue levels. Should residues concentrate in any processed products, appropriate food/feed additive tolerances must be proposed.

A label restriction must be proposed limiting the number of foliar and directed soil applications permitted per season; the data requested above must reflect the numbers proposed.

A tolerance for residues in or on peanut hulls must be proposed and tolerances or feeding restrictions must be proposed for peanut vines and hay.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

35/ Data are required depicting the residues of concern in or on mature pineapples after 7 days, and in or on pineappple forage at intervals following all possible foliar treatments at 0.75 lb ai/100 gal with an EC, starting at the time crickets or mealybugs normally appear and continuing at 7-day intervals until 7 days before harvest. The foliar tests must include tests of aerial applications. The tests must be conducted in HI. A tolerance and a pregrazing restriction for forage must be proposed; alternatively a feeding restriction may be proposed.

Data are required depicting the residues of concern in the processed products of pineapples, bran, and juice, processed from pineapples bearing measurable, weathered residues. Exaggerated rates may be necessary to achieve such initial residue levels. If residues concentrate in either processed commodity, appropriate food/feed additive tolerances must be proposed.

A tolerance for residues in or on pineapple forage and a pregrazing interval or feeding and grazing restrictions must be proposed.

36/ Data are required depicting the residues of concern in or on mature rape seed harvested the same day as the last of several foliar applications of the 8 lb/gal EC at 1 lb ai/A. Both low-volume ground and aerial application tests must be submitted. The tests must be conducted in the major rape seed (grown for seed) production regions (excluding CA).

Data are required depicting the residues of concern in or on rape seed processed products, meal and oil, processed from seed bearing measurable, weathered residues. Exaggerated rates may be required to achieve such initial residue levels. Should residues concentrate in processed commodities, appropriate food/feed additive tolerances must be proposed.

A label restriction must be proposed limiting the number of foliar applications permitted to rape seed (grown for seed); the data requested above must reflect that number.

37/ Data are required depicting the residues of concern in or on mature sunflower seeds harvested 30 days, and in or on sunflower forage harvested at intervals after the last of three applications of an EC at 1 lb ai/A beginning at flowering and continuing at 5-day intervals. Aerial applications must be included to determine their effect on residue levels. The tests must be conducted in ND and TX. A tolerance and a pregrazing interval must be proposed for forage; alternatively, the registrant may propose a grazing restriction.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.125 Residue Chemistry (continued)

Data are required depicting the residues of concern in sunflower seed, meal, oil (crude and refined), and hulls, processed from seeds bearing measurable, weathered residues. Exaggerated rates may be required to achieve such initial residue levels. If residues are found to concentrate in any of the processed products, appropriate food/feed additive tolerances must be proposed.

A tolerance for residues in or on sunflower forage and a pregrazing interval or feeding and grazing restrictions must be proposed.

38/ Data are required depicting the residues of concern in or on tobacco, both green and cured, harvested 5 days (by priming) and 15 days (by cutting) after the following individual treatment regimes: (1) several foliar applications of a WP formulation, and in separate tests, an EC at 0.75 lb ai/A; low-volume ground and aerial applications, in separate tests, must be represented; and (2) multiple foliar applications of an EC at 0.5 lb ai/100 gal. These foliar treatments are to be repeated at 5-day intervals. Each foliar study must be preceded by a preplant broadcast soil application of 6 lb ai/A. All soil applications are to be incorporated into soil and applied 7 days prior to setting. These tests must be conducted in KY and NC. [Since characterization of pyrolysis products is required (see below), some of the tests should include the use of ^{14}C-parathion (ring-labelled) so that 14C-residues will be present in or on cured or dried tobacco and, subsequently, in pyrolysis products].

Pyrolysis products derived from parathion must be characterized and the level of residue in smoke must be quantified.

A label restriction must be proposed limiting the number of foliar applications permitted per season; this number must be reflected in the data requested above.

39/ These data are reserved pending the results of the requested animal metabolism data. These data will be evaluated to determine the need for tolerances in animal products, meat and milk, poultry and eggs.

40/ Tolerance petitions must be submitted for those commodities stated throughout these residue chemistry footnotes.

41/ If new metabolites are identified and a new analytical method is required, samples may be needed.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1]/	Use Pattern[2]/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[3]/	
§158.130 Environmental Fate						
DEGRADATION STUDIES-LAB:						
161-1 - Hydrolysis	TGAI or PAIRA	A,B,C,D,E,F	No	-	Yes	9 Months
Photodegradation						
161-2 - In water	TGAI or PAIRA	A,B,C	No	-	Yes	9 Months
161-3 - On soil	TGAI or PAIRA	A,B	No	-	Yes	9 Months
161-4 - In Air	TGAI or PAIRA	A,B	No	-	Yes	9 Months
METABOLISM STUDIES-LAB:						
162-1 - Aerobic Soil	TGAI or PAIRA	A,B	No	-	Yes	27 Months
162-2 - Anaerobic Soil	TGAI or PAIRA	A,B	No	-	No[4]/	
162-3 - Anaerobic Aquatic	TGAI or PAIRA	C	No	-	Yes	27 Months
162-4 - Aerobic Aquatic	TGAI or PAIRA	C	No	-	Yes	27 Months
MOBILITY STUDIES:						
163-1 - Leaching and Adsorption/Desorption	TGAI or PAIRA	A,B,C,E,F	No	-	Yes	12 Months
163-2 - Volatility (Lab)	TEP	A,B,E,F	No	-	Yes	12 Months
163-3 - Volatility (Field)	TEP	A,B,E,F	No	-	Yes[5]/	15 Months

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition1/	Use Pattern2/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission3/
§158.130 Environmental Fate (continued)					
DISSIPATION STUDIES-FIELD:					
164-1 - Soil	TEP	A,B	No	-	Yes 27 Months
164-2 - Aquatic (Sediment)	TEP	C	No	-	Yes 27 Months
164-3 - Forestry	TEP	N/R	-	-	No
164-4 - Combination and Tank Mixes		N/R	-	-	No
164-5 - Soil, Long-term	TEP	A,B	No	-	Reserved6/
ACCUMULATION STUDIES:					
165-1 - Rotational Crops (Confined)	PAIRA	A,B,C	No	-	Yes 39 Months
165-2 - Rotational Crops (Field)	TEP	A,B,C	No	-	Yes7/ 50 Months
165-3 - Irrigated Crops	TEP	C	No	-	Yes 39 Months
165-4 - In Fish	TGAI or PAIRA	A,B,C	No	-	Yes 12 Months
165-5 - In Aquatic Nontarget Organisms	TEP	A,B,C	No	-	Yes 12 Months

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

§158.130 Environmental Fate (continued)

1/ Composition: TGAI = Technical grade of the active ingredient; PAIRA = Pure active ingredient, radiolabelled; TEP = Typical end-use product.

2/ The use patterns are coded as follows: A = Terrestrial, Food Crop; B = Terrestrial, Non-Food; C = Aquatic, Food Crop; D = Aquatic, Non-Food; E = Greenhouse, Food Crop; F = Greenhouse, Non-Food; G = Forestry; H = Domestic Outdoor; I = Indoor.

3/ Data must be submitted within the indicated timeframes, which begin on the date of the Guidance Document (see front cover for this date).

4/ The data from the anaerobic aquatic metabolism studies satisfy this requirement.

5/ If laboratory tests demonstrate a significant rate of volatization from soil, the field volatility data will also be required.

6/ The requirement for these data depend on the results of the terrestrial field dissipation studies.

7/ May be required, depending upon test results from confined crop studies (165-1).

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1]/	Use Pattern[2]/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[3]/
§158.135 Toxicology (continued)					
ACUTE TESTING:					
81-1 - Oral	TGAI	A,B,C,D,E,F	Yes	00053120, GS00155009	No
81-2 - Dermal	TGAI	A,B,C,D,E,F	No	-	Yes[4]/ 9 Months
81-3 - Inhalation	TGAI	A,B,C,D,E,F	No	-	Yes[4]/ 9 Months
81-7 - Acute Delayed Neurotoxicity	TGAI	A,B,C,D,E,F	No	-	Yes[4]/ 9 Months
SUBCHRONIC TESTING:					
82-1 - 90-Day Feeding - Rodent, Non-rodent	TGAI	A,C,E,	Yes	00072409, 00071671 00071670	No
82-2 - 21-Day Dermal - Rabbit	TGAI	A,B,C,D,E,F	No	-	Reserved[6]/
82-3 - 90-Day Dermal - Rabbit	TGAI	A,B,C,D,E,F	No	-	Reserved[6]/
82-4 - 90-Day Inhalation - Rat	TGAI	A,B,C,D,E,F	No	-	Reserved[6]/
82-5 - 90-Day Neurotoxicity - Hen/Mammal	TGAI	-	No	-	Reserved[5]/
82-6 - Special Subchronic Testing - 2 species	TGAI	A,C,E			
- Rat,			No	-	Yes[7]/
- Dog			No	-	Yes[8]/

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1]	Use Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[3]
§158.135 Toxicology (continued)					
CHRONIC TESTING:					
83-1 - Chronic Toxicity - 2 species	TGAI	A,C,E			
- Rodent, and			Yes	GS00155011	No[7]
- Non-rodent (Dog)			Yes	00093896	No[8]
83-2 - Oncogenicity Study - 2 species	TGAI	A,C,E			
- Rat (preferred), and			Yes	GS00155011	No
- Mouse (preferred)			Partially	GS00155012	Yes 50 Months
83-3 - Teratogenicity - 2 species:	TGAI	A,B,C,D,E,F			
- Rat			Yes	GS00155013	No
- Rabbit			Yes	GS00155014	No
83-4 - Reproduction - Rat 2-generation	TGAI	A,B,C,D,E,F	Yes	GS00155015	Yes[9] 39 Months
MUTAGENICITY TESTING					
84-2 - Gene Mutation (Ames Test)	TGAI	A,B,C,D,E,F	No	-	Yes[10] 9 Months
84-2 - Structural Chromosomal Aberration	TGAI	A,B,C,D,E,F	No	-	Yes[10] 12 Months
84-4 - Other Genotoxic Effects	TGAI	A,B,C,D,E,F	Partially	GS00155010	Yes[10] 12 Months

TABLE A

GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1]	Use Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[3]	
§158.135 Toxicology (continued)						
SPECIAL TESTING						
85-1 - General Metabolism	PAI or PAIRA		No	-	Yes[11]	24 Months
85-2 - Dermal Penetration	Choice		No	-	Yes	12 Months
86-1 - Domestic Animal Safety	Choice		No	-	Yes	24 Months

1/ Composition: PAI = Pure active ingredient; PAIRA = Pure active ingredient, radiolabelled; Choice = Choice of several test substances determined on a case-by-case basis.

2/ The use patterns are coded as follows: A = Terrestrial, Food Crop; B = Terrestrial, Non-Food; C = Aquatic, Food Crop; D = Aquatic, Non-Food; E = Greenhouse, Food Crop; F = Greenhouse, Non-Food; G = Forestry; H = Domestic Outdoor; I = Indoor.

3/ Data must be submitted within the indicated timeframes, which begin on the date of the Guidance Document (see front cover for this date).

4/ An acceptable review of the available literature will satisfy these requirements.

5/ This test is only required if the substance is shown to be a delayed neurotoxin in test 81-7.

6/ Contingent upon the outcome of the worker exposure analysis (see reentry section).

7/ The data below were requested in a 3(c)(2)(B) Notice dated November 27, 1985. The registrant(s) must provide reasonable and acceptable approaches to determine the "no-observed-effect level" for the eye toxicity based on possible functional retinal impairment. The Agency is prepared to accept studies such as electroretinograms to assess these effects (data must be submitted by March 27, 1987). The mechanism of abnormal gait in female rats and sciatic nerve degeneration including determination of a NOEL in rats must be addressed (data must be submitted no later than July 27, 1986). These data (eye and sciatic nerve) have been received and are being evaluated.

8/ The data listed below were requested in a 3(c)(2)(B) Notice dated November 27, 1985. The registrant(s) must provide reasonable and acceptable approaches to determine the "no-observed-effect level" for cholinesterase inhibition in the chronic dog study (data are to be submitted no later than November 27, 1987). Additionally, reasonable and acceptable approaches to determine the eye toxicity based on functional retinal impairment must be provided. The Agency is prepared to accept studies such as electroretinograms to assess these effects (data are to be submitted no later than March 27, 1987).

9/ The LEL and NOEL values could not be assessed because there were critical omissions of data. Three of the four pup parameters (decreased pup viability in high-dose F_2 pups , and combined weighted average body weight gains for F_1, and F_2 pups during lactation) were of equivocal biological significance, and compound-related parental toxicity was not observed.

10/ Data are required for all three categories. Testing must include plant metabolites and some photoalteration products in addition to the parent compound). The test battery must include (but not be limited to) an *in vitro* mammalian gene mutation, at least one *in vivo* mammalian gene assay, and at least one *in vivo* mammalian assay (preferrably mouse micronucleus). The possibility of nitrosoamine formation of some plant metabolites must be examined.

11/ An acceptable summary of literature materials may satisfy this requirement.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1]	Use Pattern[2]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[3]
§158.140 Reentry Protection					
132-1 - Foliar Dissipation	TEP	A,B,C,D,E,F	No	-	Yes[4]
132-1 - Soil Dissipation	TEP	A,E,F	No		Yes[4]
133-3 - Dermal Exposure	TEP	A,B,C,D,E,F	No	-	Yes[4,5]
133-4 - Inhalation Exposure	TEP	A,B,C,D,E,F	No	-	Yes[4]
§158.142 Spray Drift					
201-1 - Droplet Size Spectrum	TEP	A,B,C,D	No	-	Yes 14 Months
201-1 - Drift Field Evaluation	TEP	A,B,C,D	No	-	Yes 14 Months
§158.75 Other Exposure Data		A,B,C,D,E,F	No	-	Yes[6] 14 Months
Other Exposure Data		A,B,C,D,E,F	No	-	Yes[7]

1/ Composition: TEP = Typical end-use product.

2/ The use patterns are coded as follows: A = Terrestrial, Food Crop; B = Terrestrial, Non-Food; C = Aquatic, Food Crop; D = Aquatic, Non-Food; E = Greenhouse, Food Crop; F = Greenhouse, Non-Food; G = Forestry; H = Domestic Outdoor; I = Indoor.

3/ Data must be submitted within the indicated timeframes, which begin on the date of the Guidance Document (see front cover for this date).

4/ The data listed below were requested in a 3(c)(2)(B) Notice dated November 27, 1985 and are to be submitted no later than January 27, 1987.
For each representative crop/site the registrant is required to propose an acceptable reentry interval based on either: a) data on dissipation of foliar and/or soil residues of parathion (decline curve), on human exposure to those residues, and on toxicity of parathion; or b) determination of that time beyond which there are no detectable, dislodgeable residues remaining in the worker environment.

5/ Quantitative data must be submitted regarding the permeability of various materials used for protective clothing and equipment (gloves, boots, protective garments, etc.) for all liquid formulations. If these data are not available, the they must be generated using methods described in American Society of Testing and Materials (ASTM) 739-81-Standard Test Method for Resistance of Protective Materials to Permeation by Hazardous Liquid Chemicals.

6/ A product integrity study on granular formulations is needed. Data on worker exposure profiles must include all methods of application and other common farming practices, and rates of percutaneous absorption. Residue data on the photodegradation products with respect to their nature and magnitude in the plant must be determined. Additional data may be required depending on the significance of these residue data. Protocols must be submitted within six months.

7/ The data listed below were requested in a 3(c)(2)(B) Notice dated January 28, 1986.
Passive dosimetry (patch) studies on mixer/loaders and applicators during airblast, ground boom and aerial operations involving emulsifiable concentrate and wettable powder formulations are required. Biological monitoring using urine metabolites of workers exposed under the above operations is required. The studies must be conducted in compliance with the Agency's draft Pesticide Assessment Guidelines, Subdivision U, Applicator Exposure Monitoring. The protocol must be approved by the Agency as stated in the 28 January 1986 3(c)(2)(B) Notice, prior to initiation of the studies.

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1/]	Use Pattern[2/]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[3/]
§158.145 Wildlife and Aquatic Organisms					
AVIAN AND MAMMALIAN TESTING					
71-1 - Acute Avian Oral Toxicity	TGAI	A,B,C,D	Yes	05003191, 05000975 GS00155020, 00035182 00102038, 05008363	No
71-2 - Avian Subacute Dietary Toxicity	TGAI	A,B,C,D	Yes	00088881	No
71-3 - Wild Mammal Toxicity	TGAI	A,B,C,D	Yes	GS00155026, GS00155027 GS00155028	No
71-4 - Avian Reproduction	TGAI	A,B,C	No	-	Yes 24 Months
71-5 - Actual Field Testing - Mammals and Birds	TEP	A,B,C	Partially	GS00155016, GS00155017 GS00155018, GS00155021	Yes[4/]
AQUATIC ORGANISM TESTING					
72-1 - Freshwater Fish Toxicity	TGAI	A,B,C,D	Yes	GS00155023,GS00155022	No
	TEP	C,D	No	-	Yes 9 Months
72-2 - Acute Toxicity to Freshwater Invertebrates	TGAI	A,B,C,D	Yes	GS00155023, GS00155022	No
	TEP	C,D	No	-	Yes 9 Months
72-3 - Acute Toxicity to Estuarine and Marine Organisms	TGAI	A,B,C,D	Partially	05000819, 00013568 00058502, 00028004	Yes[5/] 12 Months
	TEP	C,D	No	-	Yes[6/] 12 Months

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

ata Requirement	Composition[1/]	Use Pattern[2/]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[3/]
158.145 Wildlife and Aquatic Organisms (continued)					
72-4 - Fish Early Life Stage, and Aquatic Invertebrate Life-Cycle	TGAI	A,B,C,D	Partially	GS00155022	Yes[6,7/] 15 Months
72-5 - Fish - Life-Cycle	TGAI	A,B,C,D	Partially	GS00155022	Reserved[8/] 27 Months
72-6 - Aquatic Organism Accumulation	TGAI	A,B,C,D	No	-	Yes 12 Months
72-7 - Simulated or Actual Field Testing for Aquatic Organisms	TEP	A,B,C,D	Partially	GS00155019 00105364	Yes[9/] 48 Months

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1/ Composition: TGAI = Technical grade of the active ingredient; PAI = pure active ingredient; TEP = Typical end-use product.

2/ The use patterns are coded as follows: A = Terrestrial, Food Crop; B = Terrestrial, Non-Food Crop; C = Aquatic, Food Crop; D = Aquatic, Non-Food; E = Greenhouse, Food Crop; F = Greenhouse, Non-Food; G = Forestry; H = Domestic Outdoor; I = Indoor.

3/ Data must be submitted within the indicated timeframes, which begin on the date of the Guidance Document (see front cover for this date).

4/ The data listed below were requested in a 3(c)(2)(B) Notice dated November 27, 1985 and are to be submitted no later than January 27, 1987. These data are needed to support uses such as peaches, apples, citrus, alfalfa, lettuce and sorghum. The data are needed to confirm or rebut our analysis showing risks to terrestrial wildlife on these sites. The field testing must include mortality and effects on avian breeding and measure residue levels in avian food items.

§158.145 Wildlife and Aquatic Organisms (continued)

5/ These data are required to support uses such as rice, cotton and sorghum which are grown extensively in coastal areas. These data are also required for the mosquito larvicide use unless there is a prohibition against this use in estuarine or tidal waters.

6/ These data are required for the rice use. They are also required for the mosquito larvicide use, unless there is a prohibition against this use in estuarine or tidal waters.

7/ Chronic testing with a marine invertebrate (shrimp) and fish species (sheepshead minnow) is required for uses such as rice, cotton and sorghum which are grown extensively in coastal counties.

8/ This study is reserved pending submission and review of the environmental fate data.

9/ The aquatic data show that significant population reductions of aquatic invertebrates can occur in areas adjacent to fields treated with parathion. Data from field studies and estimates from runoff modelling do not clearly indicate that fish populations can be significantly impacted. These aquatic data indicate the need for well-designed full-scale field studies which examine the effects on fish and aquatic invertebrates as well as monitor residues in the water and sediment. These studies can either be designed as mesocosms (simulated field study) or full field study (actual field study). EEB, presently, is most concerned with aquatic hazards associated with these uses: wheat, citrus, peaches, cotton, sorghum, sugarcane, rice and mosquito larvicide. The registrant must inform the Agency which of these 2 field techniques it wants to use to fulfill this data requirement. The Agency will provide guidelines for proper protocol development. Based upon the results of the field/mesocosm testing, aquatic residue monitoring of additional sites may be needed. A protocol for this study must be submitted within 6 months from the date of the issuance of this standard (see front cover for this date).

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

ata Requirement	Composition1/	Use Pattern2/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission3/
158.150 Plant Protection					
121-1 - TARGET AREA PHYTOTOXICITY	EP	B,D	No	-	No3/
NONTARGET AREA PHYTOTOXICITY					
TIER I					
122-1 - Seed Germination/ Seedling Emergence	TGAI	B,D	No	-	No3/
122-1 - Vegetative Vigor	TGAI	B,D	No	-	No3/
122-2 - Aquatic Plant Growth	TGAI	B,D	No	-	No3/
TIER II					
123-1 - Seed Germination/ Seedling Emergence	TGAI	B,D	No	-	No3/
123-1 - Vegetative Vigor	TGAI	B,D	No	-	No3/
123-2 - Aquatic Plant Growth	TGAI	B,D	No	-	No3/
TIER III					
124-1 - Terrestrial Field	TEP	B,D	No	-	No3/
124-2 - Aquatic Field	TEP	B,D	No	-	No3/

1/ Composition: TGAI = Technical grade of the active ingredient; TEP = Typical end-use product. EP = End-use product.

2/ The use patterns are coded as follows: A = Terrestrial, Food Crop; B = Terrestrial, Non-Food Crop; C = Aquatic, Food Crop; D = Aquatic, Non-Food; E = Greenhouse, Food Crop; F = Greenhouse, Non-Food; G = Forestry; H = Domestic Outdoor; I = Indoor.

3/ These requirements are generally waived unless it is believed there is a phytotoxicity problem.

TABLE A

GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition[1/]	Use Pattern[2/]	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission[3/]
§158.155 Nontarget Insect					
NONTARGET INSECT TESTING - POLLINATORS:					
141-1 - Honeybee acute contact toxicity	TGAI	A,B,C,D	Yes	00036935	No
141-2 - Honeybee - toxicity of residues on foliage	TEP	A,B,C,D	Yes	00060625, 00091653	No
141-4 - Honeybee subacute feeding study	(Reserved)[4/]				
141-5 - Field testing for pollinators	TEP	A,B,C,D	No	-	No[5/]
142-1 - Acute toxicity to aquatic insects	(Reserved)[6/]				
142-1 - Aquatic insect life-cycle study	(Reserved)[6/]				
142-3 - Simulated or actual field testing for aquatic insects	(Reserved)[6/]				

TABLE A
GENERIC DATA REQUIREMENTS FOR PARATHION

Data Requirement	Composition1/	Use Pattern2/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission3/
§158.155 Nontarget Insect (continued)					
NONTARGET INSECT TESTING - AQUATIC INSECTS:					
143-1 thru 143-3 - NONTARGET INSECT TESTING - PREDATORS AND PARASITES	(Reserved)6/				

1/ Composition: TGAI = Technical grade of the active ingredient; TEP = Typical end-use product.

2/ The use patterns are coded as follows: A = Terrestrial, Food Crop; B = Terrestrial, Non-Food; C = Aquatic, Food Crop; D = Aquatic, Non-Food; E = Greenhouse, Food Crop; F = Greenhouse, Non-Food; G = Forestry; H = Domestic Outdoor; I = Indoor.

3/ Data must be submitted within the indicated timeframes, which begin on the date of the Guidance Document (see front cover for this date).

4/ Reserved pending development of test methodology.

5/ Requirement for field studies is assessed on a case-by-case basis. Data reviewed to date do not indicate the need for a field study.

6/ Reserved pending Agency decision as to whether the data requirement should be established.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING PARATHION

Guideline Citation and Name of Test	Test Substance1/	Guidelines Status	Are Data Required? Yes	No	Data Must Be Submitted Within Timeframes Listed Below2/
§158.120 Product Chemistry					
Product Identity:					
61-1 - Product Identity and Disclosure of Ingredients	MP	R	☐	☒	
61-2 - Description of Beginning Materials and Manufacturing Process	MP	R	☒	☐	6 Months
61-3 - Discussion of Formation of Impurities	MP	R	☒	☐	6 Months
Analysis and Certification of Product Ingredients					
62-1 - Preliminary Analysis	MP	CR	☒	☐	12 Months
62-2 - Certification of Limits	MP	R	☒	☐	12 Months
62-3 - Analytical Methods to Verify Certified Limit	MP	R	☒	☐	12 Months
Physical and Chemical Characteristics					
63-2 - Color	MP	R	☒	☐	6 Months
63-3 - Physical State	MP	R	☒	☐	6 Months
63-4 - Odor	MP	R	☒	☐	6 Months

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TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING PARATHION

Guideline Citation and Name of Test	Test Substance1/	Guidelines Status	Are Data Required? Yes	No	Data Must Be Submitted Within Timeframes Listed Below2/
§158.120 Product Chemistry (continued)					
Physical and Chemical Characteristics (continued)					
63-7 - Density, Bulk Density, or Specific Gravity	MP	R	☒	☐	6 Months
63-12 - pH	MP	CR	☒	☐	6 Months
63-14 - Oxidizing or Reducing Action	MP	CR	☒	☐	6 Months
63-15 - Flammability	MP	CR	☒	☐	6 Months
63-16 - Explodability	MP	R	☒	☐	6 Months
63-17 - Storage Stability	MP	R	☒	☐	15 Months
63-18 - Viscosity	MP	CR	☒	☐	
63-19 - Miscibility	MP	CR	☒	☐	
63-20 - Corrosion Characteristics	MP	R	☒	☐	15 Months
Other Requirements:					
64-1 - Submittal of samples	MP	CR	☐	☒	

1/ MP = Manufacturing-use Product; R = Required; CR = Conditionally Required.

2/ Data must be submitted within the indicated timeframes, which begin on the date of the Guidance Document (see front cover for this date).

TABLE B

PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING PARATHION

Data Requirement	Composition1/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA § 3(c)(2)(B)? Timeframes for Data Submission
§158.135 Toxicology				
ACUTE TESTING				
81-1 - Acute Oral Toxicity - Rat	MP	No	-	No[2]
81-2 - Acute Dermal Toxicity - Rabbit	MP	No	-	No[2]
81-3 - Acute Inhalation Toxicity - Rat	MP	No	-	No[2]
81-4 - Primary Eye Irritation - Rabbit	MP	No	-	No[2]
81-5 - Primary Dermal Irritation - Rabbit	MP	No	-	No[2]
81-6 - Dermal Sensitization - Guinea Pig	MP	No	-	No[2]

1/ Composition: MP = Manufacturing-use product.

2/ These data are waived since parathion labeling bears the highest possible toxicity category (Toxicity Category I) and makes performance of valid irritation and sensitization tests technically imposible. However, if another toxicity category is desired, data must be submitted for the above studies.

SUMMARY-1

LABEL CONTENTS

40 CFR 162.10 requires that certain specific labeling statements appear at certain locations on the label. This is referred to as format labeling. Specific label items listed below are keyed to the table at the end of this Appendix.

Item 1. PRODUCT NAME - The name, brand or trademark is required to be located on the front panel, preferably centered in the upper part of the panel. The name of a product will not be accepted if it is false or misleading.

Item 2. COMPANY NAME AND ADDRESS - The name and address of the registrant or distributor is required on the label. The name and address should preferably be located at the bottom of the front panel or at the end of the label text.

Item 3. NET CONTENTS - A net contents statement is required on all labels or on the container of the pesticide. The preferred location is the bottom of the front panel immediately above the company name and address, or at the end of the label text. The net contents must be expressed in the largest suitable unit, e.g., "1 pound 10 ounces" rather than "26 ounces." In addition to English units, net contents may be expressed in metric units. [40 CFR 162.10(d)]

Item 4. EPA REGISTRATION NUMBER - The registration number assigned to the pesticide product must appear on the label, preceded by the phrase "EPA Registration No.," or "EPA Reg. No." The registration number must be set in type of a size and style similar to other print on that part of the label on which it appears and must run parallel to it. The registration number and the required identifying phrase must not appear in such a manner as to suggest or imply recommendation or endorsement of the product by the Agency. [40 CFR 162.10(e)]

Item 5. EPA ESTABLISHMENT NUMBER - The EPA establishment number, preceded by the phrase "EPA Est." is the final establishment at which the product was produced, and may appear in any suitable location on the label or immediate container. It must also appear on the wrapper or outside container of the package if the EPA establishment number on the immediate container cannot be clearly read through such wrapper or container. [40 CFR 162.10(f)]

Item 6A. INGREDIENTS STATEMENT - An ingredients statement is required on the front panel. The ingredients statement must contain the name and percentage by weight of each active ingredient and the total percentage by weight of all inert ingredients. The preferred location is immediately below the product name. The ingredients statement must run parallel with, and be clearly distinguished from, other text on the panel. It must not be placed in the body of other text. [40 CFR 162.10(g)]

SUMMARY-2

Item 6B. POUNDS PER GALLON STATEMENT - For liquid agricultural formulations, the pounds per gallon of active ingredient must be indicated on the label.

Item 7. FRONT LABEL PRECAUTIONARY STATEMENTS - Front panel precautionary statements must be grouped together, preferably within a block outline. The table below shows the minimum type size requirements for various size labels.

Size of Label on Front Panel in Square Inches	Signal Word Minimum Type Size All Capitals	"Keep Out of Reach of Children" Minimum Type Size
5 and under	6 point	6 point
above 5 to 10	10 point	6 point
above 10 to 15	12 point	8 point
above 15 to 30	14 point	10 point
over 30	18 point	12 point

Item 7A. CHILD HAZARD WARNING STATEMENT - The statement "Keep Out of Reach of Children" must be located on the front panel above the signal word except where contact with children during distribution or use is unlikely. [40 CFR 162.10(h)(1)(ii)]

Item 7B. SIGNAL WORD - The signal word (DANGER, WARNING, or CAUTION) is required on the front panel immediately below the child hazard warning statement. [40 CFR 162.10 (h)(1)(i)]

Item 7C. SKULL & CROSSBONES AND WORD "POISON" - On products assigned a toxicity Category I on the basis of oral, dermal, or inhalation toxicity, the word "Poison" shall appear on the label in red on a background of distinctly contrasting color and the skull and crossbones shall appear in immediate proximity to the word POISON. [40 CFR 162.10(h)(1)(i)]

Item 7D. STATEMENT OF PRACTICAL TREATMENT - A statement of practical treatment (first aid or other) shall appear on the label of pesticide products in toxicity Categories I, II, and III. [40 CFR 162.10(h)(1)(iii)]

Item 7E. REFERRAL STATEMENT - The statement "See Side (or Back) Panel for Additional Precautionary Statements" is required on the front panel for all products, unless all required precautionary statements appear on the front panel. [40 CFR 162.10(h)(1)(iii)]

Item 8. SIDE/BACK PANEL PRECAUTIONARY LABELING - The precautionary statements listed below must appear together on the label under the heading "PRECAUTIONARY STATEMENTS." The preferred location is at the top of the side or back panel preceding the directions for use, and it is preferred that these statements be surrounded by a block outline. Each of the three hazard warning statements must be headed by the appropriate hazard title. [40 CFR 162.10(h)(2)].

SUMMARY-3

Item 8A. HAZARD TO HUMANS AND DOMESTIC ANIMALS - Where a hazard exists to humans or domestic animals, precautionary statements are required indicating the particular hazard, the route(s) of exposure and the precautions to be taken to avoid accident, injury or damage. [40 CFR 162.10(h)(2)(i)]

Item 8B. ENVIRONMENTAL HAZARD - Where a hazard exists to non-target organisms excluding humans and domestic animals, precautionary statements are required stating the nature of the hazard and the appropriate precautions to avoid potential accident, injury, or damage. [40 CFR 162.10(h)(2)(ii)]

Item 8C. PHYSICAL OR CHEMICAL HAZARD - FLAMMABILITY Precautionary statements relating to flammability of a product are required to appear on the label if it meets the criteria in the PHYS/CHEM Labeling Appendix. The requirement is based on the results of the flashpoint determinations and flame extension tests required to be submitted for all products. These statements are to be located in the side/back panel precautionary statements section, preceded by the heading "Physical/Chemical Hazards." Note that no signal word is used in conjunction with the flammability statements.

Item 9A. RESTRICTED USE CLASSIFICATION - FIFRA sec. 3(d) requires that all pesticide formulations/uses be classified for either general or restricted use. Products classified for restricted use may be limited to use by certified applicators or persons under their direct supervision (or may be subject to other restrictions that may be imposed by regulation).

In the Registration Standard, the Agency has (1) indicated certain formulations/uses are to be restricted (Section IV indicates why the product has been classified for restricted use); or (2) reserved any classification decision until appropriate data are submitted.

The Regulatory Position and Rationale states whether products containing this active ingredient are classified for restricted use. If they are restricted the draft label(s) submitted to the Agency as part of your application must reflect this determination (see below).

If you do not believe that your product should be classified for restricted use, you must submit any information and rationale with your application for reregistration. During the Agency's review of your application, your proposed classification determination will be evaluated in accordance with the provisions of 40 CFR 162.11(c). You will be notified of the Agency's classification decision.

SUMMARY-4

Classification Labeling Requirements

If your product has been classified for restricted use, the following label requirements apply:

1. All uses restricted.

a. The statement "Restricted Use Pesticide" must appear at the top of the front panel of the label. The statement must be set in type of the same minimum size as required for human hazard signal word (see table in 40 CFR 162.10(h)(1)(iv)

b. Directly below this statement on the front panel, a summary statement of the terms of restriction must appear (including the reasons for restriction if specified in Section I). If use is restricted to certified applicators, the following statement is required: "For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's Certification."

2. Some but not all uses restricted. If the Regulatory Position and Rationale states that some uses are classified for restricted use, and some are unclassified, several courses of action are available:

a. You may label the product for Restricted use. If you do so, you may include on the label uses that are unrestricted, but you may not distinguish them on the label as being unrestricted.

b. You may delete all restricted uses from your label and submit draft labeling bearing only unrestricted uses.

c. You may "split" your registration, i.e., register two separate products with identical formulations, one bearing only unrestricted uses, and the other bearing restricted uses. To do so, submit two applications for reregistration, each containing all forms and necessary labels. Both applications should be submitted simultaneously. Note that the products will be assigned separate registration numbers.

Item 9B. MISUSE STATEMENT - All products must bear the misuse statement, "It is a violation of Federal law to use this product in a manner inconsistent with its labeling." This statement appears at the beginning of the directions for use, directly beneath the heading of that section.

SUMMARY-5

Item 10A. REENTRY STATEMENT - If a reentry interval has been established by the Agency, it must be included on the label. Additional worker protection statements may be required in accordance with PR Notice 83-2, March 29, 1983.

Item 10B. STORAGE AND DISPOSAL BLOCK - All labels are required to bear storage and disposal statements. These statements are developed for specific containers, sizes, and chemical content. These instructions must be grouped and appear under the heading "Storage and Disposal" in the directions for use. This heading must be set in the same type sizes as required for the child hazard warning. Refer to Appendix II, STOR, PEST/DIS, and CONT/DIS to determine the storage and disposal instructions appropriate for your products.

Item 10C. DIRECTIONS FOR USE - Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. When followed, directions must be adequate to protect the public from fraud and from personal injury and to prevent unreasonable adverse effects on the environment. [40 CFR 162.10]

COLLATERAL LABELING

Bulletins, leaflets, circulars, brochures, data sheets, flyers, or other written or graphic printed matter which is referred to on the label or which is to accompany the product are termed collateral labeling. Such labeling may not bear claims or representations that differ in substance from those accepted in connection with registration of the product. It should be made part of the response to this notice and submitted for review.

SUMMARY-6

LABELING REQUIREMENTS OF THE FIFRA, AS AMENDED

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
1	Product name	All products	Front panel	Center front panel	
2	Company name and address	All products	None	Bottom front panel or end of label text	If registrant is not the producer, must be qualified by "Packed for . . .," "Distributed by. . .," etc.
3	Net contents	All products	None	Bottom front panel or end of label text	May be in metric units in addition to U.S. units
4	EPA Reg. No.	All products	None	Front panel	Must be in similar type size and run parallel to other type.
5	EPA Est. No.	All products	None	Front panel, immediately before or following Reg. No.	May appear on the container instead of the label.
6A	Ingredients statement	All products	Front panel	Immediately following product name	Text must run parallel with other text on the panel.
6B	Pounds/gallon statement	Liquid products where dosage given as lbs. ai/unit area	Front panel	Directly below the main ingredients statement	
7	Front panel precautionary statements	All products	Front panel		All front panel precautionary statements must be grouped together, preferably blocked.
7A	Keep Out of Reach of Children (Child hazard warning)	All products	Front panel	Above signal word	Note type size requirements.
7B	Signal word	All products	Front panel	Immediately below child hazard warning	Note type size requirements.

SUMMARY-7

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
7C	Skull & crossbones and word POISON (in red)	All products which are Category I based on oral, dermal, or inhalation toxicity	Front panel	Both in close proximity to signal word	
7D	Statement of Practical Treatment or First Aid	All products in Categories I, II, and III	Category I: Front panel unless referral statement is used. Others: Grouped with side panel precautionary statements.	Front panel for all.	
7E	Referral statement	All products where precautionary labeling appears on other than front panel.	Front panel		
8	Side/back panel precautionary statements	All products	None	Top or side of back panel preceding directions for use	Must be grouped under the headings in 8A, 8B, and 8C; preferably blocked.
8A	Hazards to humans and domestic animals	All products in Categories I, II, and III	None	Same as above	Must be preceded by appropriate signal word.
8B	Environmental hazards	All products	None	Same as above	Environmental hazards include bee caution where applicable.

SUMMARY-8

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
8C	Physical or chemical hazards	All pressurized products, others with flash points under 150°F	None	Same as above	Refer to Appendix II guide PHYS/CHEM
9A	Restricted block	All restricted products	Top center of front panel	Preferably blocked	Includes a statement of the terms of restriction. The words "RESTRICTED USE PESTICIDE" must be same type size as signal word.
9B	Misuse statement	All products	Immediately following heading of directions for use		Required statement is: "It is a violation of Federal law to use this product in a manner inconsistent with its labeling."
10A	Reentry statement	PR Notice 83-2 or as determined by the Agency	In the directions for use	Immediately after misuse statement	
10B	Storage and disposal block	All products	In the directions for use	Immediately before specific directions for use or at the end of directions for use	Must be set apart and clearly distinguishable from from other directions for use. Refer to Appendix II guides STOR, CONT/DIS, and PEST/DIS for further information and required statements.
10C	Directions for use	All products	None	None	May be in metric as well as U.S. units

cal treatment is some reference such as "See statement of practical treatment on back panel" appears on the front panel near the word "Poison" and the skull and crossbones.

(B) *Other toxicity categories.* The statement of practical treatment is not required on the front panel except as described in paragraph (h)(1)(iii)(A) of this section. The applicant may, however, include such a front panel statement at his option. Statements of practical treatment are, however, required elsewhere on the label in accord with paragraph (h)(2) of this section if they do not appear on the front panel.

(iv) *Placement and prominence.* All the require front panel warning statements shall be grouped together on the label, and shall appear with sufficient prominence relative to other front panel text and graphic material to make them unlikely to be overlooked under customary conditions of purchase and use. The following table shows the minimum type size requirements for the front panel warning statements on various sizes of labels:

Size of label front panel in square inches	Points	
	Required signal word, all capitals	"Keep out of reach of Children"
5 and under	6	6
Above 5 to 10	10	6
Above 10 to 15	12	8
Above 15 to 30	14	10
Over 30	18	12

(2) *Other required warnings and precautionary statements.* The warnings and precautionary statements as required below shall appear together on the label under the general heading "Precautionary Statements" and under appropriate subheadings of "Hazard to Humans and Domestic Animals," "Environmental Hazard" and "Physical or Chemical Hazard."

(i) *Hazard to humans and domestic animals.* (A) Where a hazard exists to humans or domestic animals, precautionary statements are required indicating the particular hazard, the route(s) of exposure and the precautions to be taken to avoid accident, injury or damage. The precautionary paragraph shall be immediately preceded by the appropriate hazard signal word.

(B) The following table depicts typical precautionary statements. These statements must be modified or expanded to reflect specific hazards.

Toxicity category	Precautionary statements by toxicity category	
	Oral, inhalation, or dermal toxicity	Skin and eye local effects
I	Fatal (poisonous) if swallowed [inhaled or absorbed through skin]. Do not breathe vapor [dust or spray mist]. Do not get in eyes, on skin, or on clothing [Front panel statement of practical treatment required.]	Corrosive, causes eye and skin damage [or skin irritation]. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed. [Appropriate first aid statement required.]
II	May be fatal if swallowed [inhaled or absorbed through the skin]. Do not breathe vapors [dust or spray mist]. Do not get in eyes, on skin, or on clothing. [Appropriate first aid statements required.]	Causes eye [and skin] irritation. Do not get in eyes, on skin, or on clothing. Harmful if swallowed. [Appropriate first aid statement required.]
III	Harmful if swallowed [inhaled or absorbed through the skin]. Avoid breathing vapors [dust or spray mist]. Avoid contact with skin [eyes or clothing]. [Appropriate first aid statement required.]	Avoid contact with skin, eyes or clothing. In case of contact immediately flush eyes or skin with plenty of water. Get medical attention if irritation persists.
IV	[No precautionary statements required.]	[No precautionary statements required.]

(ii) *Environmental hazards.* Where a hazard exists to non target organisms excluding humans and domestic animals, precautionary statements are re-

injury or damage. Examples of the hazard statements and the circumstances under which they are required follow:

100 or less, the statement "This Pesticide is Toxic to Wildlife" is required.

(B) If a pesticide intended for outdoor use contains an active ingredient with a fish acute LC_{50} of 1 ppm or less, the statement "This Pesticide is Toxic to Fish" is required.

(C) If a pesticide intended for outdoor use contains an active ingredient with an avian acute oral LD_{50} of 100 mg/kg. or less, or a subacute dietary LC_{50} of 500 ppm or less, the statement "This Pesticide is Toxic to Wildlife" is required.

(D) If either accident history or field studies demonstrate that use of the pesticide may result in fatality to birds, fish or mammals, the statement "This pesticide is extremely toxic to wildlife (fish)" is required.

(E) For uses involving foliar application to agricultural crops, forests, or shade trees, or for mosquito abatement treatments, pesticides toxic to pollinating insects must bear appropriate label cautions.

(F) For all outdoor uses other than aquatic applications the label must bear the caution "Keep out of lakes, ponds or streams. Do not contaminate water by cleaning of equipment or disposal of wastes."

(iii) *Physical or chemical hazards.* Warning statements on the flammability or explosive characteristics of the pesticide are required as follows:

Flash point	Required text
(A) PRESSURIZED CONTAINERS	
Flash point at or below 20° F; if there is a flashback at any valve opening	Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130° F may cause bursting.
Flash point above 20° F and not over 80° F or if the flame extension is more than 18 in long at a distance of 6 in from the flame	Flammable. Contents under pressure. Keep away from heat, sparks, and open flame. Do not puncture or incinerate container. Exposure to temperatures above 130° F may cause bursting.
All other pressurized containers	Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130° F may cause bursting.
(B) NONPRESSURIZED CONTAINERS	
At or below 20° F	Extremely flammable. Keep away from fire, sparks, and heated surfaces.
Above 20° F and not over 80° F	Flammable. Keep away from heat and open flame.
Above 80° F and not over 150° F	Do not use or store near heat or open flame.

(i) *Directions for Use*—(1) *General requirements*—(i) *Adequacy and clarity of directions.* Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. When followed, directions must be adequate to protect the public from fraud and from personal injury and to prevent unreasonable adverse effects on the environment.

(ii) *Placement of directions for use.* Directions may appear on any portion of the label provided that they are conspicuous enough to be easily read by the user of the pesticide product. Directions for use may appear on

(A) If required by the Agency, such printed or graphic matter is securely attached to each package of the pesticide, or placed within the outside wrapper or bag;

(B) The label bears a reference to the directions for use in accompanying leaflets or circulars, such as "See directions in the enclosed circular:" and

(C) The Administrator determines that it is not necessary for such directions to appear on the label.

(iii) *Exceptions to requirement for direction for use*—(A) Detailed directions for use may be omitted from labeling of pesticides which are intended for use only by manufacturers of prod-

(continued)

(iv) The product registration number as prescribed in paragraph (e) of this section;

(v) The producing establishment number as prescribed in paragraph (f) of this section;

(vi) An ingredient statement as prescribed in paragraph (g) of this section;

(vii) Warning or precautionary statements as prescribed in paragraph (h) of this section;

(viii) The directions for use as prescribed in paragraph (i) of this section; and

(ix) The use classification(s) as prescribed in paragraph (j) of this section.

(2) *Prominence and legibility.* (i) All words, statements, graphic representations, designs or other information required on the labeling by the Act or the regulations in this part must be clearly legible to a person with normal vision, and must be placed with such conspicuousness (as compared with other words, statements, designs, or graphic matter on the labeling) and expressed in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

(ii) All required label text must:

(A) Be set in 6-point or larger type;

(B) Appear on a clear contrasting background; and

(C) Not be obscured or crowded.

(3) *Language to be used.* All required label or labeling text shall appear in the English language. However, the Agency may require or the applicant may propose additional text in other languages as is considered necessary to protect the public. When additional text in another language is necessary, all labeling requirements will be applied equally to both the English and other-language versions of the labeling.

(4) *Placement of Label—(i) General.* The label shall appear on or be securely attached to the immediate container of the pesticide product. For purposes of this Section, and the misbranding provisions of the Act, "securely attached" shall mean that a label can reasonably be expected to remain affixed during the foreseeable conditions and period of use. If the immediate container is enclosed within a wrapper or outside container through which the label cannot be clearly read, the label must also be securely attached to such outside wrapper or container, if it is a part of the package as customarily distributed or sold.

(ii) *Tank cars and other bulk containers—(A) Transportation.* While a pesticide product is in transit, the appropriate provisions of 49 CFR Parts 170-189, concerning the transportation of hazardous materials, and specifically those provisions concerning the labeling, marking and placarding of hazardous materials and the vehicles carrying them, define the basic Federal requirements. In addition, when any registered pesticide product is transported in a tank car, tank truck or other mobile or portable bulk container, a copy of the accepted label must be attached to the shipping papers, and left with the consignee at the time of delivery.

(B) *Storage.* When pesticide products are stored in bulk containers, whether mobile or stationary, which remain in the custody of the user, a copy of the label of labeling, including all appropriate directions for use, shall be securely attached to the container in the immediate vicinity of the discharge control valve.

(5) *False or misleading statements.* Pursuant to section 2(q)(1)(A) of the Act, a pesticide or a device declared subject to the Act pursuant to § 162.15, is misbranded if its labeling is false or misleading in any particular including both pesticidal and non-pesticidal claims. Examples of statements or representations in the labeling which constitute misbranding include:

(i) A false or misleading statement concerning the composition of the product;

(ii) A false or misleading statement concerning the effectiveness of the product as a pesticide or device;

(iii) A false or misleading statement about the value of the product for purposes other than as a pesticide or device;

(iv) A false or misleading comparison with other pesticides or devices;

(v) Any statement directly or indirectly implying that the pesticide or device is recommended or endorsed by any agency of the Federal Government;

(vi) The name of a pesticide which contains two or more principal active ingredients if the name suggests one or more but not all such principal active ingredients even though the names of the other ingredients are stated elsewhere in the labeling;

(vii) A true statement used in such a way as to give a false or misleading impression to the purchaser;

(viii) Label disclaimers which negate or detract from labeling statements required under the Act and these regulations;

(ix) Claims as to the safety of the pesticide or its ingredients, including statements such as "safe," "nonpoisonous," "noninjurious," "harmless" or "nontoxic to humans and pets" with or without such a qualifying phrase as "when used as directed"; and

(x) Non-numerical and/or comparative statements on the safety of the product, including but not limited to:

(A) "Contains all natural ingredients";

(B) "Among the least toxic chemicals known"

(C) "Pollution approved"

(6) *Final printed labeling.* (i) Except as provided in paragraph (a)(6)(ii) of this section, final printed labeling must be submitted and accepted prior to registration. However, final printed labeling need not be submitted until draft label texts have been provisionally accepted by the Agency.

(ii) Clearly legible reproductions or photo reductions will be accepted for unusual labels such as those silk-screened directly onto glass or metal containers or large bag or drum labels. Such reproductions must be of microfilm reproduction quality.

(b) *Name, brand, or trademark.* (1) The name, brand, or trademark under which the pesticide product is sold shall appear on the front panel of the label.

(2) No name, brand, or trademark may appear on the label which:

(i) Is false or misleading, or

(ii) Has not been approved by the Administrator through registration or supplemental registration as an additional name pursuant to § 162.6(b)(4).

(c) Name and address of producer, registrant, or person for whom produced. An unqualified name and address given on the label shall be considered as the name and address of the producer. If the registrant's name appears on the label and the registrant is not the producer, or if the name of the person for whom the pesticide was produced appears on the label, it must be qualified by appropriate wording such as "Packed for * * *," "Distributed by * * *," or "Sold by * * *" to show that the name is not that of the producer.

(d) *Net weight or measure of contents.* (1) The net weight or measure of content shall be exclusive of wrappers or other materials and shall be the average content unless explicitly stated as a minimum quantity.

(2) If the pesticide is a liquid, the net content statement shall be in terms of liquid measure at 68° F (20°C) and shall be expressed in conventional American units of fluid ounces, pints, quarts, and gallons.

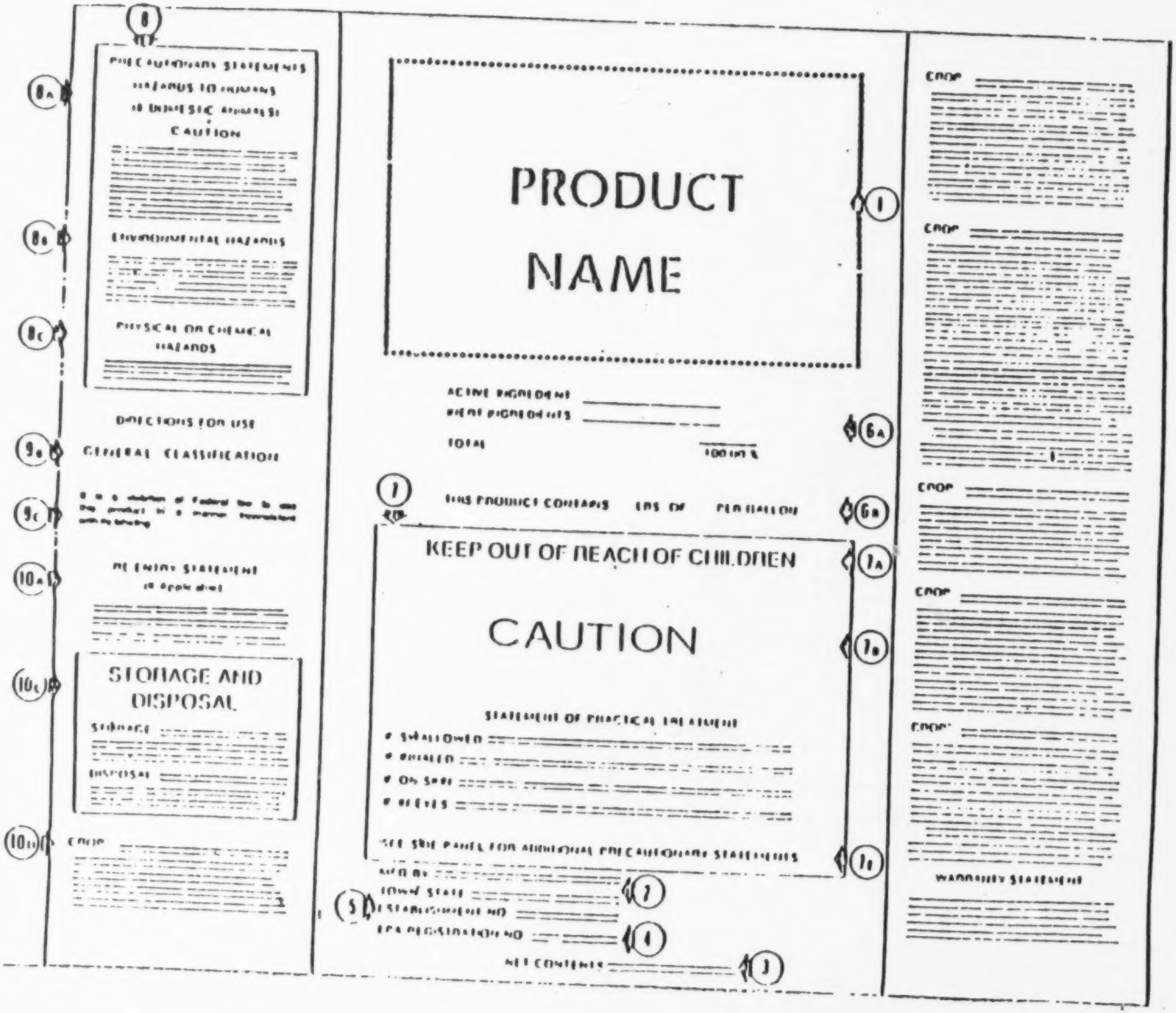
(3) If the pesticide is solid or semisolid, viscous or pressurized, or is a mixture of liquid and solid, the net content statement shall be in terms of weight expressed as avoirdupois pounds and ounces.

(4) In all cases, net content shall be stated in terms of the largest suitable units, i.e., "1 pound 10 ounces" rather than "26 ounces."

(5) In addition to the required units specified, net content may be expressed in metric units.

(6) Variation above minimum content or around an average is permissible only to the extent that it represents deviation unavoidable in good manufacturing practice. Variation below a stated minimum is not permitted. In no case shall the average content of the packages in a shipment fall below the stated average content.

(e) *Product registration number.* The registration number assigned to the pesticide product at the time of registration shall appear on the label, preceded by the phrase "EPA Registration No.," or the phrase "EPA Reg. No." The registration number shall be set in type of a size and style similar to other print on that part of the label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HAZARDS TO HUMANS
(& DOMESTIC ANIMALS)
CAUTION
8B
ENVIRONMENTAL HAZARDS
8C
PHYSICAL OR CHEMICAL
HAZARDS
DIRECTIONS FOR USE
9B
GENERAL CLASSIFICATION
9C
10A
RE-ENTRY STATEMENT
(If Applicable)
10C
STORAGE AND
DISPOSAL
STORAGE
DISPOSAL
10D
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PRODUCT
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INERT INGREDIENTS
TOTAL
100.00%
6A
7
THIS PRODUCT CONTAINS LBS OF PER GALLON
6B
KEEP OUT OF REACH OF CHILDREN
7A
CAUTION
7B
STATEMENT OF PRACTICAL TREATMENT
IF SWALLOWED
IF INHALED
IF ON SKIN
IF IN EYES
SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS
7C
MFD BY
TOWN, STATE
2
5
ESTABLISHMENT NO
EPA REGISTRATION NO
4
NET CONTENTS
3
CROP
CROP
CROP
CROP
CROP
WARRANTY STATEMENT

PHYS/CHEM-1

PHYSICAL/CHEMICAL HAZARDS

Criteria	Required Label Statement
I. Pressurized Containers	
A. Flashpoint at or below 20'F; or if there is a flashback at any valve opening.	Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130'F may cause bursting.
B. Flashpoint above 20'F and not over 80'F; or if the flame extension is more than 18 inches long at a distance of 6 inches from the valve opening.	Flammable. Contents under pressure. Keep away from heat, sparks, and flame. Do not puncture or incinerate container. Exposure to temperatures above 130'F may cause bursting.
C. All Other Pressurized Containers	Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130'F may cause bursting.
II. Non-Pressurized Containers	
A. Flashpoint at or below 20'F.	Extremely flammable. Keep away from fire, sparks, and heated surfaces.
B. Flashpoint above 20'F and not over 80'F.	Flammable. Keep away from heat and open flame.
C. Flashpoint over 80'F and not over 150'F.	Do not use or store near heat and open flame.
D. Flashpoint above 150'F.	None required.

STOR-1

STORAGE INSTRUCTIONS FOR PESTICIDES

Heading:

All products are required to bear specific label instructions about storage and disposal. Storage and disposal instructions must be grouped together in the directions for use portion of the label under the heading STORAGE AND DISPOSAL. Products intended solely for domestic use need not include the heading "STORAGE AND DISPOSAL."

Storage Instructions:

All product labels are required to have appropriate storage instructions. Specific storage instructions are not prescribed. Each registrant must develop his own storage instructions, considering, when applicable, the following factors:

1. Conditions of storage that might alter the composition or usefulness of the pesticide. Examples could be temperature extremes, excessive moisture or humidity, heat, sunlight, friction, or contaminating substances or media.
2. Physical requirements of storage which might adversely affect the container of the product and its ability to continue to function properly. Requirements might include positioning of the container in storage, storage or damage due to stacking, penetration of moisture, and ability to withstand shock or friction.
3. Specifications for handling the pesticide container, including movement of container within the storage area, proper opening and closing procedures (particularly for opened containers), and measures to minimize exposure while opening or closing container.
4. Instructions on what to do if the container is damaged in any way, or if the pesticide is leaking or has been spilled, and precautions to minimize exposure if damage occurs.
5. General precautions concerning locked storage, storage in original container only, and separation of pesticides during storage to prevent cross-contamination of other pesticides, fertilizer, food, and feed.
6. General storage instructions for household products should emphasize storage in original container and placement in locked storage areas.

PEST/DIS-1

PESTICIDE DISPOSAL INSTRUCTIONS

The label of all products, except those intended solely for domestic use, must bear explicit instructions about pesticide disposal. The statements listed below contain the exact wording that must appear on the label of these products:

1. The labels of all products, except domestic use, must contain the statement, "Do not contaminate water, food, or feed by storage or disposal."

2. Except those products intended solely for domestic use, the labels of all products that contain active ingredients that are Acute Hazardous Wastes (see list in this Appendix) or are assigned to Toxicity Category I on the basis of oral or dermal toxicity, skin or eye irritation potential, or Toxicity Category I or II on the basis of acute inhalation toxicity must bear the following pesticide disposal statement:

> "Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance."

3. The labels of all products, except those intended for domestic use, containing active or inert ingredients that are Toxic Hazardous Wastes (see list in this Appendix) or meet any of the criteria in 40 CFR 261, Subpart C for a hazardous waste must bear the following pesticide disposal statement:

> "Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance."

4. Labels for all other products, except those intended for domestic use, must bear the following pesticide disposal statement:

> "Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility."

5. Products intended for domestic use only must bear the following disposal statement: "Securely wrap original container in several layers of newspaper and discard in trash."

PESTICIDE ACTIVE INGREDIENTS THAT ARE ACUTE HAZARDOUS WASTES

I. PESTICIDES ON THE "E" LIST (with RCRA # and CAS
[40 CFR 261.33(e)]

Acrolein	P003	107-13-1
Aldicarb	P070	116-06-3
Aldrin	P004	309-00-2
Allyl alcohol	P005	107-18-6
Aluminum phosphide	P006	1302-45-0
4-Aminopyridine (Avitrol)	P008	504-24-5
Arsenic acid	P010	7778-39-4
Arsenic pentoxide	P011	1303-28-2
Arsenic trioxide	P012	1327-53-3
Calcium cyanide	P021	592-01-8
Carbon disulfide	P022	75-15-0
p-Chloroaniline	P024	106-47-8
Cyanides (soluble cyanide salts not otherwise specified)	P030	
Cyanogen chloride	P031	506-77-4
Dieldrin	P037	60-57-1
O,O-Diethyl S-[2-ethylthio)ethyl] phosphorodithioate (disulfoton)	P039	298-04-4
O,O-Diethyl O-pyrazinyl phosphorothioate (Zinophos\)	P040	297-97-2
Dimethoate	P044	60-51-5
O,O-Dimethyl O-p-nitrophenyl phosphorothioate (methyl parathion)	P071	298-00-0
4,6-Dinitro-o-cresol and salts	P047	534-52-1
4,6-Dinitro-o-cyclohexylphenol	P034	131-89-5
Dinoseb	P020	88-85-7
Endosulfan	P050	115-29-7
Endothall	P088	129-67-9
Endrin	P051	72-20-8
Famphur	P097	52-85-7
Fluoroacetamide	P057	640-19-7
Heptachlor	P059	76-48-8
Hexachlorohexahydro-exo,exo-dimethanonaphthalene (Isodrin)	P069	465-73-6
Hydrocyanic acid	P063	74-90-8
Methomyl	P066	16752-77-5
alpha-Naphthylthiourea (ANTU)	P072	86-88-41
Nicotine and salts	P075	54-11-5
Octamethylpyrophosphoramide (OMPA, schradan)	P085	152-16-9
Parathion	P089	56-38-2
Phenylmercuric acetate (PMA)	P092	62-38-4
Phorate	P094	298-02-2
Potassium cyanide	P098	151-50-8
Propargyl alcohol	P102	107-19-7
Sodium azide	P105	26628-22-8
Sodium cyanide	P106	143-33-9
Sodium fluoroacetate	P058	62-74-8

Strychnine and salts	P108	57-24-9 60-41-3
O,O,O,O-Tetraethyl dithiopyrophosphate (sulfotepp)	P109	3689-24-5
Tetraethyl pyrophosphate	P111	107-49-3
Thallium sulfate	P115	7446-18-6
Thiofanox	P045	39196-18-4
Toxaphene	P123	8001-35-2
Warfarin (>0.3%)	P001	81-81-2
Zinc phosphide (>10%)	P122	1314-84-7

50 ACTIVES

II. PESTICIDES DERIVED FROM TRI-, TETRA-, AND PENTACHLOROPHENOLS [40 CFR 261.31]

2-Chloroethyl 2-(2,4,6-trichlorophenoxy) ethyl ether	F027	5324-22-1
Dehydroabietylammonium pentachlorophenoxide	F027	35109-57-0
Erbon	F027	136-25-4
O-ethyl O-(2,4,5-trichlorophenyl) ethylphosphonothioate	F027	327-98-0
2,2'-Methylenebis (3,4,6-trichlorophenol) (Hexachlorophene)	F027	70-30-4
--Potassium salt of	F027	67923-62-0
--Sodium salt of	F027	3247-34-5
--Disodium salt of	F027	5736-15-2
Pentachlorophenol	F027	87-86-5
--Potassium salt of	F027	7778-73-6
--Sodium salt of	F027	131-52-2
--Zinc salt of	F027	2917-32-0
--Zinc salt of N-alkyl (C_{16}-C_{18})-1,3-propanediamine	F027	
--Pentachlorophenyl laurate	F027	3772-94-9
Potassium trichlorophenate (2,4,6)	F027	2591-21-1
Potassium trichlorophenate (2,4,5)	F027	35471-43-3
Silvex	F027	93-72-1
--2-Butoxyethyl ester	F027	19398-13-1
--Butoxypolypropoxypropyl ester	F027	53404-07-2
--Butoxypropyl ester	F027	25537-26-2
--Diethanolamine salt	F027	51170-59-3
--Diisopropanolamine salt	F027	53404-09-4
--Dimethylamine salt	F027	55617-85-1
--Dipropylene glycol isobutyl ether ester	F027	53535-26-5
--Ethanolamine salt	F027	7374-47-2
--2-Ethylhexyl ester	F027	53404-76-5
--Isooctyl ester	F027	53404-14-1

--Isopropanolamine salt	F027	53404-13-0
--Monohydroxylaluminum salt	F027	69622-82-8
--Polypropoxypropyl ester	F027	83562-66-7
--Potassium salt	F027	2818-16-8
--Propylene glycol isobutyl ether ester	F027	53466-84-5
--Sodium salt	F027	37913-89-6
--Triethanolamine salt	F027	17369-89-0
--Triethylamine salt	F027	53404-74-3
--Triisopropanolamine salt	F027	53404-75-4
--Tripropylene glycol isobutyl ether ester	F027	53535-30-1
Sodium 2-(2,4,5-trichlorophenoxy) ethyl sulfate	F027	3570-61-4
Tetrachlorophenols	F027	25167-83-3
--Alkylamine*amine salt (as in fatty acids of coconut oil)	F027	
--Potassium salt	F027	53535-27-6
--Sodium salt	F027	25567-55-9
2,4,5-Trichlorophenol	F027	95-95-4
2,4,6-Trichlorophenol	F027	88-06-2
2,4,5-Trichlorophenol salt of 2,6-bis[(dimethylamino)methyl] cyclohexanone	F027	53404-83-4
2,4,5-Trichlorophenol, sodium salt	F027	136-32-3
2,4,6-Trichlorophenol, sodium salt	F027	3784-03-0
2,4,5-Trichlorophenoxyacetic acid	F027	93-79-8
--Alkyl C-12 amine salt	F027	53404-84-5
--Alkyl C-13 amine salt	F027	53404-85-6
--Alkyl C-14 amine salt	F027	53535-37-8
--N,N-diethylethanolamine salt	F027	53404-86-7
--Dimethylamine salt	F027	6369-97-7
--N,N-dimethyllinoleylamine salt	F027	53404-88-9
--N,N-dimethyloleylamine salt	F027	53404-89-0
--N-oleyl-1,3-propylene diamine salt	F027	53404-87-8
--Sodium salt	F027	13560-99-1
--Triethanolamine salt	F027	3813-14-7
--Triethylamine salt	F027	2008-46-0
--Alkyl (C3H7 - C7H9) ester	F027	
--Amyl ester	F027	120-39-8
--Butoxyethoxypropyl ester	F027	1928-58-1
--2-Butoxyethyl ester	F027	2545-59-7
--Butoxypropyl ester	F027	1928-48-9
--Butyl ester	F027	93-79-8
--Dipropylene glycol isobutyl ether ester	F027	53535-31-2
--2-Ethylhexyl ester	F027	1928-47-8
--Isobutyl ester	F027	4938-72-1

--Isopropyl ester	F027	93-78-7
--Propylene glycol isobutyl ether ester	F027	53466-86-7
--Tripropylene glycol isobutyl ether ester	F027	53535-32-3
4-(2,4,5-Trichlorophenoxy)butyric acid [2,4,5-TB]	F027	93-80-1
2-(2,4,5-Trichlorophenoxy)ethyl hydrogen sulfate [2,4,5-TES]	F027	69633-04-1
1,4',5'-Trichloro-2'-(2,4,5-trichlorophenoxy) methanesulfonanilide [Edolan U]	F027	69462-14-2

PEST/DIS-6

PESTICIDES THAT ARE TOXIC HAZARDOUS WASTES

PESTICIDES ON THE "F" LIST [40 CFR 261.33(f)] (with	RCRA #, and	CAS #
Acetone	U002	67-64-1
Acrylonitrile*	U009	107-13-1
Amitrole	U011	61-82-5
Benzene*	U019	71-43-2
Bis(2-ethylhexyl)phthalate	U028	117-81-7
Cacodylic acid	U136	75-60-5
Carbon tetrachloride*	U211	56-23-5
Chloral (hydrate) (chloroacetaldehyde)	U034	302-17-0
Chlordane, technical*	U036	57-74-9
Chlorobenzene*	U037	108-90-7
4-Chloro-m-cresol	U039	59-50-7
Chloroform*	U044	67-66-3
o-Chlorophenol	U048	95-57-8
Creosote	U051	8021-39-4
Cresylic acid (cresols)*	U052	1319-77-3
Cyclohexane	U056	110-82-7
Cyclohexanone	U057	108-94-1
Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[c,d]-pentalen-2-one (Kepone, chlordecone)	U142	143-50-0
1,2-Dibromo-3-chloropropane (DBCP)	U066	96-12-8
Dibutyl phthalate	U069	84-74-2
S-2,3-(Dichloroallyl diisopropyl-thiocarbamate) (diallate,Avadex)	U062	2303-16-4
o-Dichlorobenzene*	U070	95-50-1
p-Dichlorobenzene*	U072	106-46-7
Dichlorodifluoromethane (Freon 12\)	U075	75-71-8
3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide (pronamide, Kerb\)	U192	23950-58-5
Dichloro diphenyl dichloroethane (DDD)	U060	72-54-8
Dichloro diphenyl trichloroethane (DDT)	U061	50-29-3
Dichloroethyl ether	U025	1191-17-9
2,4-Dichlorophenoxyacetic, salts and esters (2,4-D)*	U240	94-75-7
1,2-Dichloropropane	U083	8003-19-8
1,3-Dichloropropene (Telone)	U084	542-75-6
Dimethyl phthalate	U102	131-11-3
Epichlorohydrin (1-chloro-2,3-epoxypropane)	U041	106-89-8
Ethyl acetate	U112	141-78-6
Ethyl 4,4'-dichlorobenzilate (chlorobenzilate)	U038	510-15-6

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*Proposed for deletion by TCLP proposal

Ethylene dibromide (EDB)	U067	106-93-4
Ethylene dichloride*	U077	107-06-2
Ethylene oxide	U115	75-21-8
Formaldehyde	U122	50-00-0
Furfural	U125	98-01-1
Hexachlorobenzene*	U127	118-74-1
Hexachlorocyclopentadiene	U130	77-47-4
Hexachloroethane*	U131	67-72-1
Hydrofluoric acid	U134	7664-39-3
Isobutyl alcohol*	U140	78-83-1
Lead acetate	U144	301-04-2
Lindane*	U129	58-89-9
Maleic hydrazide	U148	123-33-1
Mercury	U151	7439-97-6
Methoxychlor*	U247	72-43-5
Methyl alcohol (methanol)	U154	67-56-1
Methyl bromide	U029	74-83-9
Methyl chloride	U045	74-87-3
2,2'-Methylenebis (3,4,6-trichlorophenol) (hexachlorophene) [acute waste per 261.31]	U132	70-30-4
Methylene chloride*	U080	75-09-2
Methyl ethyl ketone*	U159	78-93-3
4-Methyl-2-pentanone (methyl isobutyl ketone)	U161	108-10-1
Naphthalene	U165	91-20-3
Nitrobenzene*	U169	98-95-3
p-Nitrophenol	U170	100-02-7
Pentachloroethane	U184	76-01-7
Pentachloronitrobenzene (PCNB)	U185	82-68-8
Pentachlorophenol* [acute waste per 261.31]	U242	87-86-5
Phenol*	U188	108-95-2
Pyridine*	U196	110-86-1
Resorcinol	U201	108-46-3
Safrole	U203	94-59-7
Selenium disulfide	U205	7488-56-4
Silvex [acute waste per 261.31]	U233	93-72-1
1,1,2,2-Tetrachloroethane*	U209	79-34-5
Tetrachloroethylene*	U210	127-18-4
2,3,4,6-Tetrachlorophenol* [acute waste per 261.31]	U212	
Thiram	U244	137-26-8
Toluene*	U220	108-88-3
1,1,1-Trichloroethane* (methyl chloroform)	U226	71-55-6
Trichloroethylene*	U228	79-01-6
Trichloromonofluoromethane (Freon 11\)	U121	75-69-4
2,4,5-Trichlorophenol* [acute waste per 261.31]	U230	95-95-4
2,4,6-Trichlorophenol* [acute waste per 261.31]	U231	88-06-2

PEST/DIS-8

2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)* [acute waste per 261.31]	U232	93-76-5
Warfarin (<0.3%)	U248	81-81-2
Xylene	U239	1330-20-7
Zinc phosphide (<10%)	U249	1314-84-7

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CONT/DIS-1

CONTAINER DISPOSAL INSTRUCTIONS

The label of each product must bear container disposal instructions appropriate to the type of container.

1. Domestic use products must bear one of the following container disposal statements:

Container Type	Statement
Non-aerosol products (bottles, cans, jars)	Do not reuse container (bottle, can, jar). Rinse thoroughly before discarding in trash.
Non-aerosol products (bags)	Do not reuse bag. Discard bag in trash.
Aerosol products	Replace cap and discard containers in trash. Do not incinerate or puncture.

2. All other products must bear container disposal instructions, based on container type, listed below:

Container Type	Statement
Metal containers (non-aerosol)	Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.
Plastic containers	Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.
Glass containers	Triple rinse (or equivalent). Then dispose of in a sanitary landfill or by other approved state and local procedures.
Fiber drums with liners	Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by state and local authorities. If drum is contaminated and cannot be reused[1], dispose of in the same manner.
Paper and plastic bags	Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.
Compressed gas cylinders	Return empty cylinder for reuse (or similar wording)

[1] Manufacturer may replace this phrase with one indicating whether and how fiber drum may be reused.

EPA Index to Pesticide Chemicals

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c057501

PARATHION*

TYPE PESTICIDE: Insecticide, Acaricide, Tadpole shrimp control agent

FORMULATIONS:
Tech (94%, 95%, 97%, 98.5%, 99.99%)
FI (20%, 25%, 75%)
D (1%, 2%, 3%)
G (2%, 4%, 5%, 10%, 20%, 25%)
WP (15%, 25%)
Impr (4.7%, 9%)
FlC (4 lb/gal)
EC (2 lb/gal, 4 lb/gal, 4.2 lb/gal, 6 lb/gal, 8 lb/gal, 40%, 83.58%)

GENERAL WARNINGS AND LIMITATIONS: RESTRICTED USE PESTICIDE. After treatment, do not reenter apple, citrus, peach, nectarine or grape fields for 7 days and all other treated fields for 48 hours without protective clothing. In CA, observe specific reentry intervals for specific crops and dosages. During mixing/loading or application wear a protective suit which has long sleeves and long pants. Wear gloves, hat, and boots impermeable to parathion. Wear goggles or face shield. A helmet with visor may be substituted for the hat and goggles during aerial application. Mixer/ loaders must wear a chemical resistant apron when handling the concentrated product. During mixing/loading or application wear a pesticide respirator jointly approved by the Mining Enforcement and Safety Administration and by the National Institute for Occupational Safety and Health. The respirator must be tested to insure proper fit.
Environmental Hazard Statements: For Granular Products (non-aquatic uses) - Parathion is extremely toxic to fish and wildlife. Birds in treated areas may be killed. Do not apply directly to water. Drift and runoff from target areas may be hazardous to aquatic organisms in adjacent aquatic sites. Cover or incorporate granules which are spilled. Do not contaminate water by cleaning of equipment or disposal of wastes. For Nongranular Products (non-aquatic uses) - Parathion is extremely toxic to fish and wildlife. Birds in treated areas may be killed. Do not apply directly to water. Drift and runoff from target areas may be hazardous to aquatic organisms in adjacent aquatic sites. Do not contaminate water by cleaning of equipment or disposal of wastes. For Mosquito Larvicide Use (all formulations) - Parathion is highly toxic to fish and wildlife. Fish and other aquatic organisms in treated areas may be killed. When treating lakes or other open bodies of water apply only to shallow edges. Consult with state fish and game departments before applying to public waters. Do not apply to tidal marshes or estuarine waters.
Shrimp and crabs may be killed at recommended application rates. Do not apply where these are important resources.
Bee Caution (all formulations except granulars):
Parathion is extremely toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply parathion or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

*O,O-diethyl O-p-nitrophenyl phosphorothioate
ethyl parathion

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Provisional Update: 12-02-85

GENERAL WARNINGS AND LIMITATIONS (continued)

Agricultural Crops Tolerances:

Guava - 1 ppm
Parsnip (with or without tops or greens alone) - 1 ppm
Youngberry - 1 ppm

ENDANGERED SPECIES RESTRICTIONS (Range and Pastureland): The use of any pesticide in a manner that may kill or otherwise harm an endangered or threatened species or adversely modify their habitat is a violation of federal laws.

Before using parathion in the following areas you must first contact and obtain written permission from the Endangered Species Specialist in the Regional Offices of the U.S. Fish and Wildlife Service (FWS) nearest you. WRITTEN PERMISSION MUST BE OBTAINED ANNUALLY.

The use of parathion is controlled to prevent death or harm to endangered or threatened species that occur in the following counties or elsewhere in their range:

STATE (Regional Office FWS) Species	County (unless specified otherwise)
ALABAMA (Atlanta, GA.)	
Alabama cavefish	Lauderdale
Slackwater darter	Lauderdale, Limestone, Madison
Snail darter	Jackson, Madison
Watercress darter	Jefferson
Freshwater mussels	Jackson, Madison, Marshall
ARIZONA (Albuquerque, NM.)	
Woundfin	Mohave
Arizona (Apache) trout	Apache, Greenlee, Graham
Gila and Yaqui topminnow	Cochise, Santa Cruz, Pinal, Graham, Pima
Bonytail chub	Mohave
Masked bobwhite	Pima, Santa Cruz
ARKANSAS (Atlanta, GA.)	
Freshwater mussels	St. Francis, Cross
CALIFORNIA (Portland, OR.)	
Owens River pupfish	Mono, Inyo
Paiute cutthroat trout	Alpine, Mono, Madera
Little Kern golden trout	Tulare
Santa Cruz long-toed salamander	Santa Cruz, Monterey
Delta green ground beetle	Solano
Valley elderberry longhorn beetle	Merced
Kern primrose sphinx moth	Kern
Unarmored threespine stickelback	Los Angeles, Santa Barbara
Aleutian Canada goose	Colusa, Merced, San Joaquin, Stanislaus

GENERAL WARNINGS AND LIMITATIONS (continued)

STATE (Regional Office FWS) Species	County (unless specified otherwise)
CALIFORNIA (continued)	
California condor	Monterey, San Benito, San Luis Obispo, Kings, Tulare, Kern, Santa Barbara, Ventura, Los Angeles, Fresno
Blunt-nosed leopard lizard	Kern, Kings, Fresno, Madera, Merced, Monterey, San Luis Obispo, Santa Barbara, Stanislaus, Tulare
COLORADO (Denver, CO.)	
Greenback cutthroat trout	Boulder, Larimer, Gilpin, Park, Fremont
Colorado squawfish	Routt, Moffat, Rio, Blanco, Garfield, Mesa, Delta
Bonytail chub	
Humpback chub	
Whooping crane	Statewide
FLORIDA (Atlanta, GA.)	
Okaloosa darter	Okaloosa, Walton
Easter indigo snake	Statewide
GEORGIA (Atlanta, GA.)	
Snail darter	Catoosa
Eastern indigo snake	S.E. Georgia
HAWAII (Portland, OR.)	
Hawaiian goose	Maui, Hawaii
IDAHO (Portland, OR.)	
Whooping crane	Statewide
ILLINOIS (Twin Cities, MN.)	
Freshwater mussels	Jersey, Pulaski
INDIANA (Twin Cities, MN.)	
Freshwater mussels	Posey, Gibson, Knox, Sullivan, Vigo, Parke, Fountain, Vermillion, Warren, Allen, De Kalb
IOWA (Denver, CO.)	
Freshwater mussels	Allamakee
KANSAS (Denver, CO.)	
Whooping crane	Statewide

GENERAL WARNINGS AND LIMITATIONS (continued)

STATE (Regional Office FWS) Species	County (unless specified otherwise)
KENTUCKY (Atlanta, GA.)	
Freshwater mussels	Ballard
MARYLAND (Boston, MA.)	
Maryland darter	Harford
MISSISSIPPI (Atlanta, GA.)	
Bayou darter	Copiah, Claiborne
Mississippi sandhill crane	Jackson
MISSOURI (Denver, CO.)	
Freshwater mussels	St. Charles, Bollinger, Butler, Ripley, Wayne, Franklin, Crawford, Gasconade, Osage, Reynolds, Miller, Pulaski, Laclede, Wright, Phelps, Maries
NEBRASKA (Denver, CO.)	
Wooping crane	Statewide
NEVADA (Portland, OR.)	
Cui-ui	Washoe
Pahranagat bonytail	Lincoln
Pahrump killifish	Clark, White Pine
Devils Hole pupfish	Nye
Warm springs pupfish	Nye
Ash Meadows speckled dace	Nye
Ash Meadows amargosa pupfish	Nye
NEW MEXICO (Albuquerque, NM.)	
Socorro isopod	Socorro
Gila trout	Grant, Catron
Pecos gambusia	Chaves, Eddy
Whooping crane	Entire state
New Mexican ridge-nose rattlesnake	Hidalgo
Chihuahua chub	Grant
NORTH CAROLINA (Atlanta, GA.)	
Spotfin chub	Macon, Swain
NORTH DAKOTA (Denver, CO.)	
Whooping crane	Statewide

GENERAL WARNINGS AND LIMITATIONS (continued)

STATE (Regional Office FWS) Species	County (unless specified otherwise)
OHIO (Twin Cities, MN.)	
Scioto Madtom	Pickaway
Freshwater mussels	Defiance, Paulding, Henry, Williams, Muskingum, Morgan, Washington, Gallia
OKLAHOMA (Albuquerque, NM.)	
Whooping crane	Statewide
Leopard darter	Pushmataha, McCurtain
OREGON (Portland, OR.)	
Borax lake chub	Harney
SOUTH DAKOTA (Denver, CO.)	
Whooping crane	Statewide
TENNESSEE (Atlanta, GA.)	
Slender chub	Claiborne, Hancock
Spotfin chub	Cumberland, Fentress, Morgan
Slackwater darter	Lawrence, Wayne
Snail darter	Loudon, Meigs, Polk, Hamilton, Marion, Bradley, Knox
Yellowfin madtom	Claiborne, Hancock, Monroe
TEXAS (Albuquerque, NM.)	
Fountain darter	Hays, Comal
San Marcos salamander	Hays
Houston toad	Bastrop, Burleson, Colorado
Pecos gambusia	Pecos, Reeves, Jeff Davis
San Marcos gambusia	Hays
Comanche springs pupfish	Reeves, Jeff Davis
Leon springs pupfish	Pecos
Clear creek gambusia	Menard
Whooping crane	Statewide
UTAH (Denver, CO.)	
Woundfin	Washington
Bonytail chub	Carbon, Duchesne, Emery
Humpback chub	Garfield, Uintah, Grand
Colorado squawfish	Kane, San Juan, Wayne
Whooping crane	Statewide
Desert tortoise	Washington
VIRGINIA (Boston, MA.)	
Slender chub	Lee, Scott
Spotfin chub	Scott, Washington
Yellowfin madtom	Lee, Scott, Russell

GENERAL WARNINGS AND LIMITATIONS (continued)

STATE (Regional Office FWS) Species	County (unless specified otherwise)
WEST VIRGINIA (Boston, MA.)	
Freshwater mussels	Mason
WISCONSIN (Twin Cities, MN.)	
Freshwater mussels	Crawford
WYOMING (Denver, CO.)	
Kendall Warm Springs dace	Sublette
Wyoming toad	Albany
Whooping crane	Statewide

ENDANGERED SPECIES RESTRICTIONS (Field Crop Uses: corn, cotton, soybeans, sorghum, small grains): The use of any pesticide in a manner that may kill or otherwise harm an endangered or threatened species or adversely modify their habitat is a violation of federal laws.
Before using any pesticide in the following counties you must obtain the EPA Bulletin specific to your area. The use of parathion is prohibited in the following named counties unless specified otherwise in the Bulletins. The EPA Bulletins are available from either your County Agricultural Extension Agent, the Endangered Species Specialist in your State Wildlife Agency Headquarters or the appropriate Regional Office of the U.S. Fish and Wildlife Service or the U.S. Environmental Protection Agency. THIS BULLETIN MUST BE REVIEWED PRIOR TO PESTICIDE USE.
The use of parathion is controlled to prevent death or harm to endangered or threatened species that occur in the following counties or elsewhere in their range:

STATE Species (BULLETIN No.)	COUNTY
ALABAMA	
Slackwater darter (EPA/ES-85-05)	Lauderdale, Limestone, Madison
ARIZONA	
Woundfin (EPA/ES-85-12)	Mohave
ARKANSAS	
Fat pocketbook pearly mussel (EPA/ES-85-24)	Arkansas, Craighead, Cross, Greene, Independence, Jackson, Lee, Monroe, Poinsett, St. Francis, Woodruff

GENERAL WARNINGS AND LIMITATIONS (continued)

STATE Species (BULLETIN No.)	COUNTY
CALIFORNIA	
Delta green ground beetle (EPA/ES-85-09)	Solano
Valley elderberry longhorn beetle (EPA/ES-85-08)	Merced
Aleutian Canada goose (EPA/ES-85-02)	Colusa, Merced, San Joaquin, Stanislaus
FLORIDA	
Everglade kite (EPA/ES-85-03)	Dade, Glades, Palm Beach Broward, Collier, Indian River, Polk, Orange, Monroe, Hendry, Okeechobee, St. Lucie, Highlands, Osceola, Brevard, Lake
NEW MEXICO	
Pecos gambusia (EPA/ES-85-21)	Chaves, Eddy
TENNESSEE	
Slackwater darter (EPA/ES-85-04)	Lawrence, Wayne
Freshwater mussels (EPA/ES-85-07)	Claiborne, Hawkins, Hankock, Sullivan
TEXAS	
Attwater's greater prairie chicken (EPA/ES-85-01)	Arkansas, Austin, Colorado, Goliad, Refugio, Victoria
Comanche springs pupfish (EPA/ES-85-22)	Jeff Davis, Reeves
Pecos gambusia (EPA/ES-85-20)	Jeff Davis, Pecos, Reeves
UTAH	
Woundfin (EPA/Es-85-11)	Washington
VIRGINIA	
Freshwater Mussels (EPA/ES-85-06)	Grayson, Smyth, Scott, Lee, Washington

PARATHION

Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations

AGRICULTURAL CROPS

General Warnings and Limitations: Do not plant any food or feed crop in parathion treated soils other than those with registered parathion uses. Consult your State Agricultural Extension Service or Experiment Station regarding posting treated areas. If crop is intended for canning, consult your cannery fieldmen prior to application.

Unless otherwise specified, apply when pests first appear and repeat at 7 to 14 day intervals as needed. Per acre rates may be applied by aircraft. Do not use more than 2 pounds per acre of active ingredient when applying by aircraft or low volume ground equipment.

Do not prune or thin trees in dense orchards until at least 14 days have elapsed for dissipation of vapors from residues.

Water Volume Dilution For Per Acre Rates

a) Citrus Fruits: Apply in a minimum of 10 gallons of water per acre by aircraft or in 100 to 3,000 gallons of water per acre by ground equipment.
b) Deciduous Fruit and Nut Trees: Apply in a minimum of 5 gallons of water per acre by aircraft, in 20 to 100 gallons of water per acre by low volume ground equipment, or in 100 to 800 gallons of water per acre by high volume ground equipment.
c) Young Fruit Plantings: Apply in a minimum of 15 gallons of water per acre.
d) Grapes: Apply in a minimum of 5 gallons of water per acre by aircraft or in 20 to 100 gallons of water per acre by low volume ground equipment, or in 100 to 250 gallons of water per acre by high volume ground equipment.
e) Small Fruits: Apply in a minimum of 5 gallons of water per acre by aircraft or in a minimum of 10 gallons of water per acre by ground equipment.
f) Vegetable and Field Crops: Apply in a minimum of 1 gallon of water per acre by aircraft or in minimum 5 gallons of water per acre by ground equipment. For soil application of emulsifiable concentrate formulations, apply in a minimum of 20 gallons of water per acre by ground equipment.

General Timing Recommendations and Pest Information

a) For apple maggot, codling moth, Oriental fruit moth, and plum curculio, apply at petal fall and repeat at 10 to 14 day intervals until control is achieved.
b) For armyworm on vegetable and field crops, labeling claims control is effective only up to third instar.
c) For cutworms on vegetable and field crops, labeling claims the climbing cutworms are the primary target pests.
d) For lesser peach tree borer and peach tree borer, apply during appearance of the moths in early to late summer, Make 2 to 3 applications to trunk from ground to scaffold limbs timed with moth flight.
e) For spider mites such as twospotted spider mite and Willamette mite on deciduous fruit trees, repeat at 7 to 10 day intervals during the summer months.
f) For mosquito control in field crops and other outdoor areas, applica-

General Warnings and Limitations: (continued)

tion should be made under the supervision of mosquito abatement district officers and other authorized agencies.

g) For wireworms control on vegetable crops, apply at least 7 to 14 days before planting. Use the lower dosage for mineral soils and higher dosage for organic soils.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/23001AA	Alfalfa		1.25 ppm (fresh alfalfa) 5 ppm (alfalfa hay) 5 day preharvest or pregrazing interval through 0.8 pound per acre for foliar application or 0.6 pound per acre for broadcast soil application.
ITBJADA	Alfalfa caterpillar	0.25-0.8 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. For alfalfa weevil larvae, apply when 50 to 75 percent of terminals are damaged; or when buds and shoots first appear ragged; or when larvae count reaches 25 per sweep. For severe infestation, apply to stubble immediately after removal of crop. For spotted alfalfa aphid, apply to seedlings when 0.5 to 1 aphid per plant and to older stands when 5 aphids per leaf and honeydew are found. Apply the higher dosage for beet armyworm, corn earworm and stink bugs.
INASBWA	Alfalfa weevil (larvae and adults)		
IRACAAA	Aphids (including greenbug, pea aphid, spotted alfalfa aphid and yellow clover aphid)		
ITBCCFA	Armyworm		
INBPAVA	Asiatic garden beetle		
ITBCCNA	Beet armyworm		
INBGAAA	Blister beetles		
INASBUA	Clover head weevil		
INASBXA	Clover-leaf weevil		
ITBCBOA	Corn earworm		
IVAHAAA	Crickets		
ITBCABA	Cutworms (including climbing cutworms)		
IVABAAA	Grasshoppers		
INBPALA	Green June beetle		
IRAFAAA	Leafhoppers		
IQAMARA	Lygus bugs		
ITBNAJA	Range caterpillar		
ILAVAAA	Spider mites		
IRAEAAA	Spittlebugs		
IQAQAAA	Stink bugs		
INASDNA	Sweetclover weevil		
IRASADA	Threecornered alfalfa hopper		
IMOAAAA	Thrips		
ITBUAAA	Tortricid moths		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Alfalfa (continued)		
	Pest continued from previous page.		
ITBCATA	Velvetbean caterpillar		
ITAAAMA	Webworms		
INBPALA	Green June beetle	0.48-0.6 lb/A (4% G)	Broadcast soil application. Apply uniformly in damaged fields.
IOAMAAA	Mosquitoes	0.1 lb/A (8 lb/gal EC)	Outdoor application. Do not apply to water drainage areas where runoff will contaminate bodies of water.
		Also refer to Alfalfa (Seed Crop) for additional information.	
/23001BA /23001AA	Alfalfa (Seed Crop)		1.25 ppm (fresh alfalfa) 5 ppm (alfalfa hay) Foliar application through 0.8 pound per acre.
ISAQAFA	Alfalfa seed chalcid	0.125-0.5 lb/A (25% WP) (2-8 lb/gal EC)	Use limited to CA and NV. Foliar application to seed crop.
		0.25-0.8 lb/A (25% WP) (2-8 lb/gal EC)	Use limited to areas other than CA and NV. Foliar application to seed crop.
/03001AA	Almond		3 ppm (hulls) 0.1 ppm (almonds) Do not apply after hulls begin to open through 3 pounds per acre for foliar application. Do not feed treated hulls to livestock.
IRACAAA ILAAABA	Aphids Mites	1-2.6 lb/A (2% D)	Foliar application and bark application.
IRACAAB ILAAABB	Aphids (eggs) Mites (eggs)	0.375-0.5 lb/100 gal (25% WP) or	Dormant application. May be tank mixed with petroleum distillate.

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Almond (continued)		
	Pest list continued from previous page.		
ITAMABA	Peach twig borer	0.5 lb/100 gal (2-8 lb/gal EC)	
IRAAABA	Scales (including black scale, European fruit lecanium, olive scale, peach scale, and San Jose scale)		
IRACAAA	Aphids (including green peach aphid)	0.33-0.5 lb/ 100 gal or 1-2.5 lb/A (25% WP) or 0.25-0.5 lb/ 100 gal (2-8 lb/gal EC) or 0.5-2.5 lb/A (4-8 lb/gal EC)	Foliar application and bark application.
IQAAABA	Catfacing insects		
IMAAAEA	Leafrollers (including fruittree leafroller and redbanded leafroller)		
ILAAABA	Mites (including spider mites)		
ITBGAQA	Oriental fruit moth		
ITAMABA	Peach twig horer		
ITBQAHA	Peachtree borer		
ILAJAWA	Pearleaf blister mite		
INASAVA	Plum curculio		
IRAAABA	Scales (including cottony peach scale, lecanium scales, olive scale, and San Jose scale)		
INBQBQA	Shothole borer		
ITAUADA	Tent caterpillars		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/04001AA	Apple		1 ppm 14 day preharvest interval through 6 pounds per acre for foliar application or bark application. May injure the fruit and foliage of Golden Delicious, Jonathan, and McIntosh apples as well as related varieties such as Cortland, Kendall, Macoun, and Melba. Slow drying weather increases danger of injury. Consult State Agricultural Extension Service or Experiment Station for advice on possibility of injury and safening the spray by using activated carbon.
IRACAAA	Aphids	0.3-4 lb/A (1-3% D)	Foliar application. Make 1 or 2 applications as needed. For redbanded leafroller, repeat as needed as brood larvae hatch.
ITBGAZA	Codling moth		
ITBUAGA	Fruittree leafroller		
IVABAAA	Grasshoppers		
IRAFAAA	Leafhoppers		
IRAWAAA	Mealybugs		
ILAAABA	Mites (including spider mites such as twospotted spider mite)		
IRAXALA	Pear psylla		
INASAVA	Plum curculio		
ITBUAPA	Redbanded leafroller		
IRACAAA	Aphids (including apple aphid, rosy apple aphid, and woolly apple aphid)	0.075-0.5 lb/100 gal (15-25% WP) or 0.5-2.5 lb/A (25% WP) or 0.14-2 lb/100 gal or 0.2-6 lb/A (2-8 lb/gal EC)	Delayed dormant application and foliar application. For aphids, apply during prepink stage, pink stage, petal fall, or when pests first appear. Repeat at 10 to 14 day intervals or as needed. For European apple sawfly and fruittree leafroller, apply at petal fall. For eyespotted bud moth, apply during prebloom period if pest is a serious problem and satisfactory control is not resulting from regular spray program. For leafminers, apply during prepink stage or pink stage. For redbanded leafroller, apply at petal fall and at first, fifth, and sixth cover. For shothole borer, apply to foliage and trunk.
ITBQAMA	Apple bark borer		
INASDJA	Apple flea weevil		
IQAXACA	Apple lacebug		
IOBMAQA	Apple maggot		
IQAMAOA	Apple red bug		
ITBKABA	Bagworm		
ITANABA	Cankerworms		
ITBGAZA	Codling moth		
ITBGBOA	Eyespotted bud moth		
INAMADA	Flea beetles		
IVABAAA	Grasshoppers		
INBPAZJ	Japanese beetle (adults)		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Apple (continued)		
	Pest list continued from previous page.		
ITBMAEA	Leaf crumpler		
IXAFAAA	Leafhoppers		
IMAAAGA	Leafminers		
IMAAAEA	Leafrollers (including fruittree leafroller and redbanded leafroller)		
IRAWAAA	Mealybugs		
ILAAABA	Mites (including spider mites such as clover mite, European red mite, Pacific spider mite, Schoene spider mite, twospotted spider mite, and Willamette spider mite)		
ITBUALA	Orange tortrix		
ITBGAQA	Oriental fruit moth		
IRAXALA	Pear psylla		
ILAJAWA	Pearleaf blister mite		
INASAVA	Plum curculio		
ISAAABA	Sawflies (including Eruopean apple sawfly)		
IRAAABG	Scales (including Forbes scale, olive scale, oystershell scale, and scurfy scale) (crawlers)		
INBQBQA	Shothole borer		
ITAPABA	Tentiform leafminer		
IRACAAB	Aphids (eggs)	0.5 lb/100 gal (25% WP) (4-8 lb/gal EC)	Dormant application or delayed dormant application. Tank mix with petroleum distillate.
ILAAABB	Mites (including spider mites) (eggs)		
IRAAABA	Scales		

EPA Index to Pesticide Chemicals

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/05001AA	Apricot		1 ppm 14 day preharvest interval through 3.75 pounds per acre for foliar or bark application.
IRACAAA	Aphids	1-2 lb/A (2% D)	Foliar application.
ITBGAZA	Codling moth		
ITBUAGA	Fruittree leafroller		
ILAAABA	Mites		
ITBGAQA	Oriental fruit moth		
IRACAAA	Aphids (including black cherry aphid, mealy plum aphid, and woolly apple aphid)	0.1-0.5 lb/ 100 gal (15-25% WP) or 0.75-3 lb/A (25% WP) or 0.1875-0.67 lb/100 gal (2-8 lb/gal EC) or 1-3 lb/A (8 lb/gal EC)	Foliar application and bark application. For Oriental fruit moth, apply at shuck split, 10 to 12 days later, and if needed 42 and 21 days before harvest.
ITANABA	Cankerworms		
IQAAABA	Catfacing insects		
ITBGAZA	Codling moth		
ITBGBOA	Eyespotted bud moth		
IVABAAA	Grasshoppers		
INBPAZJ	Japanese beetle (adults)		
IRAFAAA	Leafhoppers		
IMAAAEA	Leafrollers (including fruittree leafroller and redbanded leafroller)		
ITBQALA	Lesser peachtree borer		
IRAWAAA	Mealybugs		
ILAAABA	Mites (including spider mites such as clover mite, European red mite, Pacific spider mite, Schoene spider mite, two-spotted spider mite, and Willamette spider mite)		
ITBUALA	Orange tortrix		
ITBGAQA	Oriental fruit moth		
ITBUAYA	Pandemis moths		
ITAMABA	Peach twig borer		
ITBQAHA	Peachtree borer		
IRAXALA	Pear psylla		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Apricot (continued)		
ISBEAEA	Pear sawfly		
ILAJAWA	Pearleaf blister mite		
INASAVA	Plum curculio		
IRAAABA	Scales (including black scale, Forbes scale, lecanium scales such as European fruit lecanium, and San Jose scale)		
IMOAAAA	Thrips		
IOBMAOA	Western cherry fruit fly		
IRACAAB	Aphids (including black cherry aphid) (eggs)	0.5 lb/ 100 gal (25% WP)	Dormant application or delayed dormant application. Tank mixed with petroleum distillate.
ILAVABA	Clover mite	(4-8 lb/gal EC)	
ILAAABB	Mites (including spider mites) (eggs)		
ITAMABA	Peach twig borer		
IRAAABA	Scales (including black scale, European fruit lecanium, and San Jose scale)		
ITAMABA	Peach twig borer	2 lb/10-20 gal (25% WP)	Use limited to CA. Foliar application. Apply by aircraft at time of egg hatch.
/13018AA	Artichoke		1 ppm 7 day preharvest interval through 1 pound per acre for foliar application. Preplant broadcast soil application through 5 pounds per acre.
IRACAAA	Aphids	0.5 lb/A (2% D) or 0.375-1 lb/A (25% WP) (2-8 lb/gal EC)	Foliar application. Apply the higher dosage for artichoke plume moth.
ITBLAAA	Plume moths (including artichoke plume moth)		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Artichoke (continued)		
IJDAABA	Garden symphylan	5 lb/A (25% WP)	Preplant broadcast soil application. For garden symphylan, apply into the top 6 to 9 inches of soil. For wireworms, apply into the top 4 to 6 inches of soil.
INAVAAA	Wireworms	2-4 lb/A (25% WP)	
/28000AA	Avocado		1 ppm 21 day preharvest interval through 2.5 pounds per acre for foliar application.
IRACAAA	Aphids	0.5-0.625 lb/ 100 gal (25% WP) or 0.125-0.375 lb/100 gal (2-8 lb/gal EC) or 1-2.5 lb/A (4 lb/gal EC)	Foliar application. For whiteflies, tank mix with petroleum distillate.
IQAYAMA	Avocado lace bug		
IRAFATA	Avocado leafhopper		
INAMBJA	Banded cucumber beetle		
INBPAJA	Blossom anomala		
INASCUA	Citrus root weevil		
IRAKARA	Dictyospermum scale		
IRAKAQA	Florida red scale		
IRAHADA	Florida wax scale		
IVABAAA	Grasshoppers		
IMOCAJA	Greenhouse thrips		
IRAKAJA	Latania scale		
ISASBHA	Little fire ant		
IRAWAAA	Mealybugs		
IRAHAVA	Pyriform scale		
IMOCAPA	Redbanded thrips		
IQAQALA	Southern green stink bug		
ITBUAAA	Tortricid moths (including western avocado leafroller)		
ITBUAKA	Webbingworm		
IRABAAA	Whiteflies		
IRAFATA	Avocado leafhopper	1.5-2.5 lb/A (25% WP)	Use limited to CA. Foliar application. Apply in a minimum of 10 gallons of water per acre by aircraft or in a minimum of 40 gallons of water per acre by ground equipment.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28063AA	Barley		1 ppm 15 day preharvest or pregrazing interval through 0.75 pound per acre for foliar application.
/28062AA	Oats		
IRACAAA	Aphids (including corn leaf aphid, English grain aphid, greenbug and yellow clover aphid)	0.25-0.75 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. For greenbug, apply the lower dosage of liquid formulation in 2 gallons of water per acre by aircraft or low volume ground equipment. Apply the higher dosage for black grass bug, chinch bug, cutworms, false chinch bug, leafhoppers, and stink bugs.
ITBCCFA	Armyworm		
IQAMAJA	Black grass bug		
INBGAAA	Blister beetles		
IQALAEA	Chinch bug		
ITBCABA	Cutworms (including climbing cutworms)		
ITBCCOA	Fall armyworm		
IQALAHA	False chinch bug		
IVABAAA	Grasshoppers		
IRAFAAA	Leafhoppers		
IQAMARA	Lygus bugs		
ILAAABA	Mites (including winter grain mite and spider mites such as banks grass mite, brown wheat mite and petrobia mites)		
IQAQAAA	Stink bugs (including Say stink bug)		
IMOAAAA	Thrips		
ITAAAMA	Webworms		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28063AA	Beans		1 ppm 7 day preharvest interval through 0.5 pound per acre for foliar application. 15 day preharvest interval through 0.8 pound per acre for foliar application. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids	0.25-0.8 lb/A (1-3% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. Apply the higher dosage for cabbage looper, climbing cutworms, corn earworm, cucumber beetles, and stink bugs.
ITBCCFA	Armyworm		
INAMARA	Bean leaf beetle		
ITBCBOA	Corn earworm		
INAMACA	Cucumber beetles (including Diabrotica species)		
ITBCABA	Cutworms (including climbing cutworms)		
INAMADA	Flea beetles		
IRAFAAA	Leafhoppers (including potato leafhopper)		
IMAAAGA	Leafminers (including serpentine leafminer)		
IMAAAEA	Leafrollers		
ITBMBFA	Limabean pod borer		
ITAAAOA	Loopers (including cabbage looper)		
IQAMARA	Lygus bugs		
INAPAFA	Mexican bean beetle		
ILAAABA	Mites (including spider mites such as twospotted spider mite)		
INAGADA	Pea weevil		
IMCAAAA	Springtails		
IQAQAAA	Stink bugs		
IQAMATA	Tarnished plant bug		
IMOAAAA	Thrips		
ITBCATA	Velvetbean caterpillar		
IRABAAA	Whiteflies		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Beans (continued)		
IJBAAAA	Centipedes	5 lb/A (2-10% G) or 5-6 lb/A (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into soil immediately after application. For mealybugs and root aphids, incorporate into top 6 inches of soil.
ITBCABA	Cutworms		
IRAWAAA	Mealybugs (including ground mealybug)		
IRACABA	Root aphids		
IMCAAAA	Springtails		
INBPAAA	White grubs		
IJDAAAA	Symphylans (including garden symphylan)	5 lb/A (2-10% G) (25% WP) or 5-6 lb/A (4-8 lb/gal EC)	Soil application (preplant broadcast or at time of planting). Incorporate into top 6 to 9 inches of soil.
INAVAAA	Wireworms	2.7-4 lb/A (2-25% G) (25% WP) or 3-6 lb/A (2-8 lb/gal EC)	Preplant broadcast soil application. Incorporate immediately into top 4 to 9 inches of soil.
/28002AA	Beets		1 ppm (with or without tops or greens alone) 15 days preharvest interval through 0.8 pound per acre (roots) for foliar application. 21 day preharvest interval through 0.8 pound per acre (tops) for foliar application. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids	0.15-0.8 lb/A (2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application.
ITBCCFA	Armyworm		
INBGAAA	Blister beetles		
INAMADA	Flea beetles		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers		
IMAAAGA	Leafrollers		
ILAAABA	Mites (including spider mites)		
ITAAAMA	Webworms (including beet webworm)		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Beets (continued)		
ITBCABA	Cutworms	6 lb/A (10% G) (8 lb/gal EC)	Preplant broadcast soil application. Incorporate into soil immediately after application. For symphylans and wireworms, mix granular formulations into top 4 to 9 inches of soil.
IJDAAAA	Symphylans (including garden symphylan)	5 lb/A (2% G) (25% WP) or 5-6 lb/A (4-8 lb/gal EC)	
INBPAAA	White grubs	6 lb/A (4-8 lb/gal EC)	
INAVAAA	Wireworms	2-5 lb/A (2-25% G) or 2-6 lb/A (2-8 lb/gal EC)	
/01002AA /01003AA /01005AA /01006AA	Blackberry Boysenberry Loganberry Raspberry		1 ppm 15 day preharvest interval through 1 pound per acre for foliar application.
IRACAAA	Aphids	0.2-0.8 lb/A (1-2% D) or 0.25 lb/100 gal or 0.125-1 lb/A (25% WP) or 0.25-1 lb/100 gal or 0.2-1 lb/A (2-8 lb/gal EC)	Delayed dormant application and foliar application.
ILAAABA	Mites (including spider mites such as twospotted spider mite)		
IOACAKA	Raspberry cane maggot		
INAHAGA	Rednecked cane borer		
IMOAAAA	Thrips		
INASDMA	Obscure root weevil	1 lb/A (2-8 lb/gal EC)	Postharvest application. Apply to soil and ground cover over the roots of canes.
INASCNA	Woods weevil		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Blackberry cluster (continued)		
ITBQACA	Raspberry crown borer	1 lb/A (2-8 lb/gal EC)	Foliar application. Apply to crown area and lower canes.
/01002AA	(Blackberry)		
/01003AA	(Boysenberry)		
IMAAAEA	Leafrollers	0.375 lb/A (25% WP)	Foliar application.
/15008AA	Blackeyed Beans		1 ppm 15 day preharvest interval through 0.5 pounds per acre for foliar application.
IRACAAA	Aphids	0.25-0.5 lb/A	Foliar application.
ITASAEA	Bean leafroller	(1-2% D)	
IMAAAGA	Leafminers	(2-4 lb/gal EC)	
IQAQAAA	Stink bugs		
/01009AA	Blueberry		1 ppm 14 day preharvest interval through 0.6 pound per acre for foliar application.
IRACAAA	Aphids	0.4-0.5 lb/A (2% D) or 0.25-0.5 lb/A (4-8 lb/gal EC)	Foliar application. For cherry and cranberry fruitworms, apply immediately after first bloom and repeat 7 to 18 days later
IOBMAPA	Blueberry maggot	0.3-0.4 lb/A (1-2% D) or 0.26 lb/ 100 gal [125-150 gal/A] (15% WP) or 0.25-0.5 lb/A (2-8 lb/gal EC)	
IMOAAAA	Thrips		
ITBGBXA	Blueberry tipworm	0.25-0.5 lb/A (4-8 lb/gal EC)	

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	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Blueberry (continued)		
ITBGARA ITBMAGA INASAVA	Cherry fruitworm Cranberry fruitworm Plum curculio	0.3 lb/100 gal (15% WP) or 0.5 lb/A (25% WP) or 0.5-0.615 lb/100 gal or 0.25-0.6 lb/A (4-8 lb/gal EC)	
IRAFAAA	Leafhoppers	0.3 lb/100 gal or 0.3-0.375 lb/A (4-8 lb/gal EC)	
IRAHAJA	Lecanium scales	0.5 lb/A (4 lb/gal EC)	
INASEHA	Blossom weevils	0.3-0.5 lb/A (2% D) or 0.3-0.5 lb/100 gal or 0.3-0.5 lb/A (4-8 lb/gal EC)	Delayed dormant application. Apply at green tip stage and repeat 7 to 9 days later.
IOBMAPA ITBGBXA INASAVA IMOAAAA	Blueberry maggot Blueberry tipworm Plum curculio Thrips	0.25 lb/100 gal [100-240 gal/A] (2-8 lb/gal EC)	Prefruiting or postharvest application. Apply before fruit set or after harvest.
IRAHAJA	Lecanium scales	0.3 lb/100 gal [100-200 gal/A] (2-8 lb/gal EC)	

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Boysenberry	See Blackberry cluster.	
/13005AA /13006AA /13008AA /13007AA	Broccoli Brussels Sprouts Cauliflower		1 ppm 7 day preharvest interval through 0.5 pound per acre for foliar application. 21 day preharvest interval from above 0.5 through 1.5 pounds per acre for foliar application. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids (including turnip aphid)	0.15-1 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. Apply the lower dosage for aphids and thrips. Apply the higher dosage for cabbage looper, climbing cutworms, flea beetles, harlequin bug and vegetable weevil.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
INAMACA	Cucumber beetles		
ITBCABA	Cutworms (including climbing cutworms)		
INBUAAA	Darkling beetles		
ITBWAFA	Diamondback moth		
ITBCCOA	Fall armyworm		
INAMADA	Flea beetles		
IQAQAKA	Harlequin bug		
ITBJAHA	Imported cabbageworm		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
ILAVAAA	Spider mites (including twospotted spider mite)		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		
ITBCCSA	Cabbage looper	0.5-1.5 lb/A (4 lb/gal EC)	
IJBAAAA	Centipedes	5 lb/A (2-10% G) (25% WP) or 5-6 lb (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into soil immediately after application. For symphylans and wireworms, mix into top 4 to 9 inches of soil.
ITBCABA	Cutworms		
IMCAAAA	Springtails		
IJDAAAA	Symphylans (including garden symphylan)		
INBPAAA	White grubs		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Broccoli cluster (continued)		
INAVAAA	Wireworms	2.7-4 lb/A (2-25% G) (25% WP) or 3-6 lb/A (4-8 lb/gal EC)	
	Brussels Sprouts	See Broccoli cluster.	
/13007AA	Cabbage		1 ppm 7 day preharvest interval through 0.25 pound per acre for foliar application. 10 day preharvest interval from above 0.25 through 0.5 pound per acre for foliar application. 21 day preharvest interval from above 0.5 through 1.5 pounds per acre for foliar application. Preplant broadcast soil application through 6 pounds per acre.
		Refer to Broccoli cluster for additional information.	
/13007BA	Cabbage (Seed Crop)		1 ppm Foliar application to seed crop through 1 pound per acre.
INASAOA	Cabbage seedpod weevil	1 lb/A (2-8 lb/A EC)	Foliar application to seed crop.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/14003AA	Carrots		1 ppm 15 day preharvest interval through 1 pound per acre for foliar application. Preplant broadcast soil application through 5 pounds per acre. Postplant broadcast soil application through 0.6 pound per acre. Do not use treated tops for food or feed.
IRACAAA	Aphids (including tulip bulb aphid)	0.2-1 lb/A (1-3% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. For aphids, apply in up to 300 gallons of water per acre when using wettable powder and emulsifiable concentrate formulations. For aster leafhopper, treat field margins also. Apply the higher rates for flea beetles.
IOBBABA	Carrot rust fly		
INAMADA	Flea beetles		
IRAFAAA	Leafhoppers (including aster leafhopper)		
IMAAAGA	Leafminers (including serpentine leafminer)		
ILAAABA	Mites (including spider mites such as petrobia mites)		
IQAQAAA	Stink bugs		
INASCCA	Vegetable weevil		
IOBBABA	Carrot rust fly	0.5 lb/ 100 gal/A (2-4 lb/gal EC)	Soil and foliar applications. For first brood larvae, apply to furrow at planting time. For second brood larvae, apply evenly to foliage.
IJBAAAA	Centipedes	5 lb/A (2% G) (25% WP) (8 lb/gal EC)	Preplant broadcast soil application. Incorporate granular formulations into top 4 to 9 inches of soil. Incorporate wettable powder and emulsifiable concentrate formulations into top 3 to 6 inches of soil.
JDDAABA	Garden symphylan		
IMCAAAA	Springtails		
INAVAAA	Wireworms	2.7-4 lb/A (2-25% G) or 3-5 lb/A (4-8 lb/gal EC)	
INAVAAA	Wireworms	0.6 lb/A (2% G)	Postplant broadcast soil application.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Cauliflower	See Broccoli cluster.	
/28003AA	Celery		1 ppm 15 day preharvest interval through 0.25 pound per acre for foliar application. 21 day preharvest interval from above 0.25 pound through 0.5 pound per acre for foliar application. 30 day preharvest interval from above 0.5 through 1 pound per acre for foliar and postplant broadcast soil application. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids	0.2-0.75 lb/A (1-2% D) or 0.2-1 lb/A (15-25% WP) (2-8 lb/gal EC)	Foliar application. For aster leafhoppers, treat margins of field also. Apply the higher dosage for leafhoppers, leafminers and whiteflies.
ITBMCQA	Celery leaftier		
INAMCFA	Colorado potato beetle		
ITBCABA	Cutworms (including climbing cutworms and variegated cutworms)		
INBUAAA	Darkling beetles		
INAMADA	Flea beetles		
IRAFAAA	Leafhoppers (including aster leafhopper)		
IMAAAGA	Leafminers (including serpentine leafminer)		
ITAAAOA	Loopers (including cabbage looper and celery looper)		
ILAAABA	Mites (including spider mites such as twospotted spider mite)		
ITBHAFA	Parsleyworm		
ITABACA	Saltmarsh caterpillar		
IQAMATA	Tarnished plant bug		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		
IRABAAA	Whiteflies		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Celery (continued)		
ITBCABA	Cutworms	0.6-0.75 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		
IJDAAAA	Symphylans (including garden symphylan)	5 lb/A (2-10% G) (25% WP) (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into top 4 to 9 inches of soil immediately after application.
INAVAAA	Wireworms	2-4 lb/A (2-25% G) (25% WP) or 2-6 lb/A (4-8 lb/gal EC)	
/03002AA	Cherry		1 ppm 14 day preharvest interval through 2 pounds per acre for foliar application or bark application.
IRACAAA	Aphids	1-2 lb/A (2% D)	Foliar application
ITBGARA	Cherry fruitworm		
ILAAABA	Mites		
ITBGAQA	Oriental fruit moth		
INASAVA	Plum curculio		
IRACAAA	Aphids (including black cherry aphid and mealy plum aphid)	0.1-0.5 lb/100 gal (15-25% WP) (2-8 lb/gal EC) or 0.5-2 lb/A (25% WP)	Foliar application and postharvest application. For fruitflies, apply at petal fall and repeat at 10 to 14 day intervals beginning at shuck split, or apply within 5 days of adult emergence and repeat at 7 to 10 day intervals. For additional control, apply during postharvest period. Treat interplanted trees, and following harvest, treat all unpicked fruit and pollinizer trees. Repeat immediately after every rain. For fruittree leafroller, apply at petal full or shuck split. For oriental fruit moth, apply at shuck split and repeat 10 to 12 days later. For plum curculio, apply at
ITANABA	Cankerworms		
ITAGAAA	Casebearers		
ITBGARA	Cherry fruitworm		
ITBGBOA	Eyespotted bud moth		
IZZZAKA	Fruitflies (including cherry fruit fly and western cherry fruitfly)		
IVABAAA	Grasshoppers		
INBPAZT	Japanese beetle (adults)		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Cherry (continued)		
ITBMAEA	Leaf crumpler		petal full or shuck split and make 1 or 2 additional applications at 8 to 10 day intervals. For shothole borer, apply after petal fall and in late summer.
IMAAAGA	Leafminers		
IMAAAEA	Leafrollers (including fruittree leafroller)		
ITBGASA	Lesser appleworm		
IRAWAAA	Mealybugs		
ILAAABA	Mites (including spider mites such as clover mite, European red mite, Pacific spider mite, Schoene spider mite, twospotted spider mite, and Willamette spider mite)		
ITBUALA	Orange tortrix		
ITBGAQA	Oriental fruit moth		
ITBUAYA	Pandemis moths		
INASAVA	Plum curculio		
INBPAUA	Rose chafer		
ISAAABA	Sawflies (including pear sawfly)		
IRAAABG	Scales (including Forbes scale, lecanium scales, and San Jose scale) (crawlers)		
INBQBQA	Shothole borer		
IMOAAAA	Thrips		
IRACAAB	Aphids (including black cherry aphid) (eggs)	0.5 lb/100 gal (25% WP) (4 lb/gal EC) or 1.5-2 lb/A (25% WP) or	Dormant application or delayed dormant application. Tank mix with petroleum distillate.
ILAAABB	Mites (including brown mite and spider mites such as clover mite) (eggs)		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Cherry (continued)		
ITAMABA	Peach twig borer	0.25-0.5 lb/ 100 gal (8 lb/gal EC)	
IRAAABA	Scales (including black scale, European fruit lecanuim, and San Jose scale)		
/02000AA	Citrus Fruits		1 ppm 14 day preharvest interval through 4 pounds per acre for foliar application. 30 day preharvest interval from above 4 through 10 pounds per acre for foliar application. Do not make more than 3 applications per year. Do not use treated citrus peel for food purposes.
IRACAAA	Aphids	1-4 lb/A (2% D)	Foliar application.
IMOCAOA	Citrus thrips		
ITBUAGA	Fruittree leafroller		
ILAAABA	Mites		
IRACAAA	Aphids	0.25-0.375 lb/100 gal (15% WP) or 1.5-3 lb/A (25% WP) or 0.125-0.5 lb/ 100 gal or 0.5-10 lb/A (2-8 lb/gal EC)	Use limited to areas other than CA. Foliar application. In FL, apply in late spring (postbloom) and in summer spray(June through September).
IRAHBBA	Black scale		
IRAKBQA	Chaff scale		
IRARAKA	Cottonycushion scale		
IRAKAQA	Florida red scale		
IRAKBGA	Glovers scale		
IVABAAA	Grasshoppers		
IMAAAEA	Leafrollers		
IRAWAAA	Mealybugs		
ITBUALA	Orange tortrix		
ITBHADA	Orangedog		
IQAMAAA	Plant bugs		
IRAKBDA	Purple scale		
IRAKCCA	Snow scales		
ITAXAAA	Tussock moths		
IRABAAA	Whiteflies		
IRAKAFA	Yellow scale		

Citrus Fruits (continued)

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
IRARAKA	Cottonycushion scale	0.15 lb/ 100 gal or 0.25-0.3 lb/ 100 gal (15% WP) or 0.1875 lb/ 100 gal (4-8 lb/gal EC) or 0.3-0.375 lb/ 100 gal (4-8 lb/gal EC)	Foliar application. Apply higher rate between June and September or the lower rate for each formulation in 2 sprays, the first in spring with melanose and scab treatments and the second between June and September which may be tank mixed with sulfur for 15 percent wettable powder formulation.
IRAKAQA	Florida red scale		
IRAWAAA	Mealybugs		
IRAKBDA	Purple scale		
IRAKCCA	Snow scales		
IRACAAA	Aphids	0.15 lb/ 100 gal or 0.3 lb/ 100 gal (8 lb/gal EC)	Foliar application. Tank mix with petroleum distillate for lower dosage or with sulfur for higher dosage.
IRARACA	Cottonycushion scale		
IRARAKA	Florida red scale		
IRAWAAA	Mealybugs		
IRAKBDA	Purple scale		
IRACAAA	Aphids	0.375-2 lb/ 100 gal (25% WP)	Foliar application. May be tank mixed with petroleum distillate.
IRAWAAA	Mealybugs		
IMOAAAA	Thrips		
ILAAABA	Mites	0.25-0.375 lb/100 gal (2-8 lb/gal EC)	Use limited to areas other than CA. Foliar application. Tank mix with petroleum distillate
IRABAAA	Whiteflies		
IRACAAA	Aphids	0.3-1 lb/ 100 gal or 1-3 lb/A (25% WP) or 0.167-2 lb/ 100 gal or 1-2.5 lb/A (2-8 lb/gal EC)	Use limited to CA. Foliar application. For aphids, mealybugs, and scales; apply immediately after bloom (petal fall) or before fruit becomes infested to prevent fruit scarring. For black scale, apply within 30 days after completion of major hatch, providing hatch is very even.
IRAHBBA	Black scale		
IRAHAGA	Brown soft scale		
IRAKAEA	California red scale		
IRAHAHA	Citricola scale		
IMOCAOA	Citrus thrips		
IRARACA	Cottonycushion scale		
INASCWA	Fuller rose beetle		
IVAOAAA	Katydids		
IRAWAAA	Mealybugs		
ITAAAFA	Orangeworms (including climbing cutworms, fruit-		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Citrus Fruits (continued)		
	Pest list continued from previous page.		
	tree leafroller, omniverous leafroller, orange tortrix, orangedog, pink scavenger caterpillar, and western tussock moth)		
IRAKBDA	Purple scale		
IRAKAFA	Yellow scale		
IRAHBBA	Black scale	0.15 lb/ 100 gal (15% WP) or 0.25-0.44 lb/ 100 gal (25% WP) or 0.25-0.667 lb/100 gal (4-8 lb/gal EC)	Use limited to CA and the Southwest. Foliar application. Make a full coverage spray during August through November. Apply within 30 days after completion of major hatch, providing brood is very even.
		0.075 lb/ 100 gal (15% WP) or 0.125-0.375 lb/100 gal (25% WP) or 0.125-0.625 lb/100 gal (4-8 lb/gal EC)	Use limited to CA. Foliar application. May be tank mixed with petroleum distillate.
IRAKAEA IRAKAFA	California red scale Yellow scale	0.075 lb/ 100 gal or 0.375 lb/ 100 gal (15% WP) or	Use limited to CA and the Southwest. Foliar application. Apply immediately after bloom or before fruit becomes infested in a full coverage spray. May be tank mixed with petroleum distillate, use lower rates when tank mixing wettable powder

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Citrus Fruits (continued)		
		0.125-0.375 lb/100 gal or 0.625 lb/100 gal (25% WP) or 0.125-0.667 lb/100 gal (4-8 lb/gal EC)	formulations.
IRAKAEA	California red scale	4-10 lb/A (8 lb/gal EC)	Use limited to CA Foliar application. Tank mix with petroleum distillate or apply higher rate alone.
IRAHAHA IRARACA	Citricola scale Cottonycushion scale	0.9 lb/100 gal/A or 0.0375 lb/100 gal or 0.075 lb/100 gal or 0.15 lb/100 gal (15% WP) or 1.5 lb/100 gal [100-400 gal/A] or 0.0625 lb/100 gal or 0.125 lb/100 gal or 0.25 lb/100 gal (25% WP) (4-8 lb/gal EC)	Use limited to CA and the Southwest. Foliar application. Apply first rate for fall and early winter control, or second rate as a full coverage spray during August to November, increase to third rate during February to March, and increase to fourth rate during May and June applications after petal fall.

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Citrus Fruits (continued)		
IRAHAHA IRARAKA IRAKBDA IRAKAFA	Citricola scale Cottonycushion scale Purple scale Yellow scale	0.25 lb/ 100 gal (8 lb/gal EC)	Use limited to CA Foliar application. Tank mix with petroleum distillate.
IMOCAOA IVAOAAA	Citrus thrips Katydids	0.15 lb/ 100 gal or 0.9 lb/ 100 gal/A (15% WP) or 0.25-0.5 lb/ 100 gal (25% WP) (4-8 lb/gal EC) or 1.5-2 lb/ 100-200 gal/A or 1.5 lb/ 10-20 gal/A (25% WP) (4-8 lb/gal EC)	Use limited to CA and the Southwest. Foliar application. Apply at petal fall, repeat in late summer and early fall to protect new growth and prevent fruit scarring.
IRAKBDA	Purple scale	0.075-0.225 lb/100 gal (15% WP) or 0.125-0.375 lb/100 gal (25% WP) or 0.125-0.625 lb/100 gal (4-8 lb/gal EC)	Use limited to CA and the Southwest. Foliar application. May be tank mixed with petroleum distillate. Use lower rate of each formulation.

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/23003AA /23003BA	Clover (including Clover (Seed Crop))		1 ppm 15 day preharvest or pregrazing interval through 0.8 pound per acre for foliar application or 0.6 pound per acre for broadcast soil application.
ITBJADA	Alfalfa catepillar	0.25-0.8 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. Apply the higher dosage for beet armyworm, black grass bug and corn earworm.
INASBWA	Alfalfa weevil (larvae and adults)		
IRACAAA	Aphids (including greenbug, pea aphid, spotted alfalfa aphid, sweet clover aphid and yellow clover aphid)		
ITBCCFA	Armyworm		
INBPAVA	Asiatic garden beetle		
ITBCCNA	Beet armyworm		
IQAMAJA	Black grass bug		
INBGAAA	Blister beetles		
INASBUA	Clover head weevil		
INASBXA	Clover leaf weevil		
ITBCBOA	Corn earworm		
IVAHAAA	Crickets		
ITBCABA	Cutworms (including climbing cutworms)		
IVABAAA	Grasshoppers		
INBPALA	Green June beetle		
IRAFAAA	Leafhoppers		
IQAMARA	Lygus bugs		
ILAAABA	Mites (including petrobia mites and spider mites)		
ITBNAJA	Range caterpillar		
IRAAAEA	Spittlebugs		
IQAQAAA	Stink bugs		
INASDNA	Sweetclover weevil		
IRASADA	Threecornered alfalfa hopper		
IMOAAAA	Thrips		
ITBUAAA	Tortricid moths		
ITBCATA	Velvetbean caterpillar		
ITAAAMA	Webworms		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Clover (including Clover (Seed Crop)) (continued)		
INBPALA	Green June beetle	0.48-0.6 lb/A (4% G)	Broadcast soil application. Apply uniformly in damaged fields.
/13009AA	Collards		1 ppm 7 day preharvest interval through 0.25 pound per acre for foliar application. 10 day preharvest interval from above 0.25 through 0.5 pound per acre for foliar application. 15 day preharvest interval on fall and winter crops through 0.5 pound per acre for foliar application. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids (including turnip aphid)	0.15-0.5 lb/A (1-2% D) (15-25% WP) (4-8 lb/gal EC)	Foliar applications. Apply the lower dosage for aphids and thrips.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
ITBCABA	Cutworms (including climbing cutworms)		
ITBWAFA	Diamondback moth		
ITBCCOA	Fall armyworm		
IQAQAKA	Harlequin bug		
ITBJAHA	Imported cabbageworm		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
IOACAHA	Seedcorn maggot		
ILAVAAA	Spider mites (including twospotted spider mite)		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		
INAVAAA	Wireworms	3-4.2 lb/A (10% G) or 3-6 lb/A (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into top 4 to 9 inches of soil.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28005AA	Corn		1 ppm (corn and corn forage) 12 day preharvest interval through 1 pound per acre for foliar application (corn or corn forage) or 0.8 pound per acre for postplant broadcast soil application. Preplant broadcast soil application through 6 pounds per acre. Soil application (at planting time or cultivation) through 3 pounds per acre.
IRACAAA	Aphids (including corn leaf aphid)	0.2-0.5 lb/A (1-2% D) or 0.15-1 lb/A (15-25% WP) (2-8 lb/gal EC)	Foliar application. For corn earworm, apply to silks as soon as they appear. Make 3 to 4 applications at 2 to 3 day intervals as needed. Reapply immediately after rain. For corn rootworms (adults), apply when adult beetles become abundant and repeat as needed. Apply the lower dosage for aphids and sap beetles. Apply the higher dosage for chinch bugs and corn earworm.
ITBCCFA	Armyworm		
IZZZADA	Budworms		
IQALAEA	Chinch bugs		
ITBCBOA	Corn earworm		
INAMBHJ	Corn rootworms (adults)		
IOAXABA	Corn silk flies		
ITBCABA	Cutworms (including climbing cutworms)		
ITBCCOA	Fall armyworm		
IVABAAA	Grasshoppers		
INBPAZA	Japanese beetle		
IMAAAGA	Leafminers		
ILAAABA	Mites (including spider mites)		
INBJAAA	Sap beetles		
IQAQAAA	Stink bugs		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		
IJBAAAA	Centipedes	5 lb/A (2-25% G) (25% WP) or 5-6 lb/A (4-8 lb/gal EC)	Preplant broadcast soil application. For symphylans, incorporate into top 6 to 9 inches of soil immediately after application.
IMCAAAA	Springtails		
IJDAAAA	Symphylans (including garden symphylan)		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Corn (continued)		
INAMBHC	Corn rootworms (larvae) (including northern corn rootworm, southern corn rootworm and western corn rootworm)	1-1.5 lb/A or 1-1.5 lb/ 13,068 ft row [with 40 inch row spacing] (2-25% G) (4-8 lb/gal EC)	Soil application (at planting time or cultivation). Apply evenly in furrow 0.5 inch below soil surface at time of planting, or apply in a 5 to 7 inch band over the row at time of planting or cultivation.
ITBCABA	Cutworms	3-4 lb/A (2-25% G) or 3-6 lb/A (4-8 lb/gal EC)	Soil application (preplant or at planting time). Apply the lower rate at planting time and the range as a preplant application. Incorporate into top 1 to 3 inches of soil immediately after application.
ITBCABA INAVAAA	Cutworms Wireworms	0.6-0.8 lb/A (2% G)	Postplant broadcast soil application.
ITBMCCA	European corn borer	0.25-1 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. Apply when 50 percent of eggs are in 'black head' stage, or after 20 egg masses are counted per 100 stalks and first eggs are in 'black head' stage, or when 75 percent of the plants show 'shothole feeding'. Repeat at 5 to 10 day intervals or as needed. Consult your state agricultural experiment station for proper timing of treatments.
INBPAAA	White grubs	3-4 lb/A (2-25% G) or 3-6 lb/A (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into top 4 to 6 inches of soil immediately after application.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Corn (continued)		
INAVAAA	Wireworms	2.7-6 lb/A (2-25% G) (4-8 lb/gal EC) or 2-4 lb/A (25% WP)	Preplant broadcast soil application. Incorporate into top 4 to 9 inches of soil immediately after application.
		1.5-3 lb/A (10% G)	Soil application (at planting time). Incorporate into soil after application.
/28007AA	Cotton		0.75 ppm (cottonseed) 7 day preharvest or handpicking interval through 1.25 pounds per acre for foliar application. 15 day preharvest interval (if cotton trash is to be fed to dairy animals or animals being finished for slaughter) through 1.25 pounds per acre for foliar application. Workers entering fields within 24 hours after application should wear protective clothing.
IRACAAA	Aphids (including cotton aphid)	0.1-1.2 lb/A (1-2% D) or 0.25-1 lb/A (15-25% WP) or 0.25-1.25 lb/A (2-8 lb/gal EC)	Foliar applications. For aphids, apply when pests first appear or honeydew develops. For aphids, leafhoppers and spittlebugs, do not make more than 2 to 3 applications during the growing season when using dust formulations. For mites, apply when pests first appear or when leaves begin turning yellow to reddish brown. Repeat once or twice at 5 to 7 day intervals. Apply the lower dosage for aphids and mites. Apply the higher dosage for bollworm, cotton leafperforator, false chinch bug, fleahoppers, leafminers, lygus bugs, saltmarsh caterpillar and tobacco budworm.
ITBCCFA	Armyworm		
INASAHA	Boll weevil		
ITBCBOA	Bollworm		
ITBCAFA	Brown cotton leafworm		
ITBCCSA	Cabbage looper		
ITAYAHA	Cotton leafperforator		
ITBCAUA	Cotton leafworm		
IQALAHA	False chinch bug		
IQAMBDA	Fleahoppers (including cotton fleahopper)		
IRAFAAA	Leafhoppers (including brown cotton leafhopper and southern garden leafhopper)		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/10010AA	Cucumber		1 ppm 15 days preharvest interval through 0.5 pound per acre for foliar and postplant broadcast soil applications. Preplant broadcast soil application through 4 pounds per acre. Do not apply before plants start to vine. Do not apply unless plants are dry.
IRACAAA	Aphids	0.2-0.5 lb/A (1-2% D) or 0.15-0.5 lb/A (15-25% WP) (2-8 lb/gal EC)	Foliar application. For melonworm and pickleworm, apply at first bloom or when pests first appear. For squash vine borer, consult your state agricultural experiment station for proper timing of treatments.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
INAMACA	Cucumber beetles (including spotted cucumber beetle and striped cucumber beetle)		
ITBCABA	Cutworms (including climbing cutworms)		
INBUAAA	Darkling beetles		
INAMADA	Flea beetles		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
ITBMAUA	Melonworm		
ILAAABA	Mites (including spider mites such as petrobia mites and twospotted spider mite)		
ITBMAWA	Pickleworm		
IQAGAFA	Squash bug		
ITBQADA	Squash vine borer		
IQAQAAA	Stink bugs		
IMOAAAA	Thrips		
IRABAAA	Whiteflies		
ITBCABA	Cutworms	3-4 lb/A (2-25% G) (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into top 1 to 3 inches of soil.
ITBCABA	Cutworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/01011AA	Currant		1 ppm 30 day preharvest interval through 0.8 pounds per acre for foliar application.
IRACAAA	Aphids (including currant aphid)	0.25 lb/100 gal (25% WP) or 0.1-0.8 lb/A (2-8 lb/gal EC) or 0.17-0.375 lb/100 gal (8 lb/gal EC)	Delayed dormant and foliar application. For aphids, apply when leaf buds open in spring. For spider mites, apply prebloom.
ITBQAPA	Currant borer		
ISBEATA	Imported currant worm		
ILAVAAA	Spider mites (including two-spotted spider mite		
/06004AA	Date		1 ppm 21 day preharvest interval through 0.75 pound per acre for foliar application.
INBJAAA	Nitidulid beetles	0.5-0.75 lb/A (4-8 lb/gal EC)	Foliar application.
/01004AA	Dewberry		1 ppm 15 day preharvest interval through 0.5 pound per acre for foliar application.
IRACAAA	Aphids	0.2-0.5 lb/A (1-2% D) (25% WP) (4-8 lb/gal EC) or 0.25 lb/100 gal (25% WP) or 0.33-0.5 lb/100 gal (8 lb/gal EC)	Delayed dormant application and foliar application.
IMAAAEA	Leafrollers		
IOACAKA	Raspberry cane maggot		
INAHAGA	Rednecked cane borer		
ILAVAAA	Spider mites (including two-spotted mite)		
IMOAAAA	Thrips		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/11001AA	Eggplant		1 ppm 15 day preharvest interval through 0.8 pound per acre for foliar application or 0.5 pound per acre for postplant broadcast soil application. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids	0.18-0.8 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. Apply the higher dosage for whiteflies.
INBGAAA	Blister beetles		
INAMCFA	Colorado potato beetle		
IQAXAAA	Flea beetles		
INAMADA	Lace bugs (including eggplant lace bug)		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
ILAAABA	Mites (including spider mites such as tomato russet mite and twospotted spider mite)		
IRAXAAA	Psyllids		
IQAQAAA	Stink bugs		
IMOAAAA	Thrips		
IRABAAA	Whiteflies		
ITBCABA	Cutworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		
IJDAAAA	Symphylans (including garden symphlan)	5 lb/A (2% G)	Preplant broadcast soil application. Incorporate into top 4 to 9 inches of soil immediately after application.
INAVAAA	Wireworms	2.7-4 lb/A (2-25% G) or 3-6 lb/A (4-8 lb/gal EC)	

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/13015AA	Endive		1 ppm 21 day preharvest interval through 0.5 pound per acre for foliar and postplant broadcast soil applications. Preplant broadcast soil application through 6 pounds per acre.
ITBCAVA	Alfalfa looper	0.2-0.5 lb/A (1-2% D) (25% WP) (2-8 lb/gal EC)	Foliar application.
IRAFAAA	Aphids (including green peach aphid)		
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
INAMACA	Cucumber beetles (including banded cucumber beetles)		
ITBJAHA	Imported cabbageworm		
IRAFAAA	Leafhoppers (including aster leafhopper)		
IMAAAGA	Leafminers		
IQAMARA	Lygus bugs		
ITBCABA	Cutworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		
INAVAAA	Wireworms	2.7-4 lb/A (2-25% G) or 3-6 lb/A (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into soil into top 4 to 9 inches of soil immediately after application.
/06005AA	Fig		1 ppm 30 day preharvest interval through 2.5 pounds per acre for foliar application.
IRAKBFA	Fig scale	0.5 lb/100 gal (25% WP)	Dormant application. Tank mix with petroleum distillate.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Fig (continued)		
IRAKBFG	Fig scale (crawlers)	0.25-0.5 lb/100 gal or 1.5-2.5 lb/A (25% WP) or 0.1875-1.25 lb/100 gal (2-8 lb/gal EC) or 0.5-2 lb/A (4-8 lb/gal EC)	Foliar application. Apply during last of May or first of June. For heavy fig scale infestation, may be tank mixed with petroleum distillate preferrably with lower dosages of per 100 gallons rates.
ILAVAAA	Spider mites (including Pacific spider mite and twospotted spider mite)		
/03005AA	Filbert		0.1 ppm Do not apply after hulls begin to open through 3 pounds per acre for foliar application. Do not feed treated hulls to livestock.
IRAWAHA	Apple mealybug	0.25 lb/100 gal (25% WP) (2-8 lb/gal EC)	Delayed dormant application or foliar application. For eyespotted bud moth, apply during prebloom period if control is not achieved by a regular spray program.
ITBGBOA	Eyespotted bud moth		
IRACCPA	Filbert aphid		
ILAVAAA	Spider mites		
/14007AA	Garlic		1 ppm 15 day preharvest interval through 0.5 pound per acre for foliar and postplant broadcast soil applications.
IRACAAA	Aphids	0.25-0.5 lb/A (2% D) (2-8 lb/gal EC)	Foliar application. Apply the lower dosage for thrips.
ILAVAUA	Brown wheat mite		
IMAAAGA	Leafminers		
IOACACA	Onion maggot		
ILAVATA	Petrobia mites		
IMOAAAA	Thrips (including onion thrips)		
ITBCABA	Cutworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/01013AA	Gooseberry		1 ppm 15 day preharvest interval through 0.8 pound per acre for foliar application.
IRACAAA	Aphids (including currant aphid)	0.4-0.6 lb/A (2% D) or 0.25 lb/100 gal (25% WP) or 0.12-0.8 lb/A (2-8 lb/gal EC) or 0.17-0.67 lb/100 gal (4-8 lb/gal EC)	Delayed dormant and foliar application. For aphids, apply when leaf buds open in spring.
ISBEATA	Imported currantworm		
ILAVAAA	Spider mites (including two-spotted spider mite)		
ITBQAPA	Currant borer	0.67-0.8 lb/A (2-8 lb/gal EC)	Foliar application.
/01014AA	Grapes		1 ppm 14 day preharvest interval through 1.5 pounds per acre for foliar application. Apply dosages above 1.5 through 2.5 pounds per acre before fruit is the size of buckshot, after harvest, or during dormant period. Application by ground equipment preferred.
IRACAAA	Aphids	0.4-1.5 lb/A (1-3% D)	Foliar application.
ITBCCZA	Climbing cutworms		
ITBMATA	Grape leaffolder		
INBPBBA	Hoplia beetles		
IRAFAAA	Leafhoppers		
IRAWAAA	Mealybugs (including grape mealybug)		
ILAVAAA	Spider mites (including two-spotted spider mite)		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Grapes (continued)		
IRACAAA	Aphids (including grapevine aphid)	0.15-1 lb/100 gal (15-25% WP) or 0.5-2.5 lb/A (25% WP) or 0.188-1 lb/100 gal (2-8 lb/gal EC) or 0.23-2.5 lb/A (4-8 lb/gal EC)	Delayed dormant application, foliar application or postharvest application. Per acre rates may be applied by aircraft. For grape berry moth, apply just before bloom, at petal, fall 7 to 14 days after petal fall, 35 to 45 days after bloom, and 14 days later. For grape mealybug, apply in late June or early July. For general control, repeat at 5 to 7 day intervals.
INASCSA	Black vine weevil		
IQAQAFA	Consperse stink bug		
IQALAHA	False chinch bug		
ITBGBDA	Grape berry moth		
ITBMATA	Grape leaffolder		
INBPBBA	Hoplia beetles		
INBPAZJ	Japanese beetle (adults)		
IRAFAAA	Leafhoppers (including grape leafhopper)		
IMAAAEA	Leafrollers (including redbanded leafroller)		
IRAWAAA	Mealybugs (including grape mealybug)		
IRAAABA	Mites (including spider mites such as twospotted spider mite)		
IMOAAAA	Thrips		
ITBMATA	Grape leaffolder	2.5 lb/200-300 gal/A (8 lb/gal EC)	Dormant application. Apply before bud swell. Direct spray towards trunks and arms. Tank mix with petroleum distillate.
IRAWANA	Grape mealybug	0.5 lb/100 gal (25% WP) or 0.75-2.5 lb/100 gal (4-8 lb/gal EC)	Dormant application or foliar application. Apply during dormant period or before fruit is the size of buckshot. May be tank mixed with petroleum distillate.
ITBGBDA	Grape berry moth		
ITBMATA	Grape leaffolder		
INBPBBA	Hoplia beetles		
IMAAAEA	Leafrollers		
ILAAABA	Mites (including spider mites)		
IMOAAAA	Thrips		
IRAWAAA	Mealybugs	1 lb/100 gal (25% WP) (4-8 lb/gal EC)	Use limited to CA. Dormant application. Apply to vines after pruning but before budding. Refer to CA Extension Bulletin for complete spray program. Tank mix with petroleum distillate.

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	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
22001AA 28035AA	Grasses (Forage)		1 ppm (grass for forage) 15 day preharvest or pregrazing interval through 0.75 pound per acre for foliar application.
ITBJADA	Alfalfa caterpillar	0.25-0.75 lb/A (2-8 lb/gal EC)	Foliar application.
INASBWA	Alfalfa weevil (larvae and adults)		
IRACAAA	Aphids (including greenbug, pea aphid, spotted alfalfa aphid, sweet clover aphid and yellow clover aphid)		
ITBCCFA	Armyworm		
INBPAVA	Asiatic garden beetle		
ITBCCNA	Beet armyworm		
INBGAAA	Blister beetles		
INASBUA	Clover head weevil		
INASBXA	Clover leaf weevil		
ITBCBOA	Corn earworm		
IVAHAAA	Crickets		
ITBCABA	Cutworms (including climbing cutworms)		
ITBCCOA	Fall armyworm		
IVABAAA	Grasshoppers		
INBPALA	Green June beetle		
IRAFAAA	Leafhoppers		
IQAMARA	Lygus bugs		
ILAAABA	Mites (including petrobia mites and spider mites)		
ITBNAJA	Range caterpillar		
IRAAAEA	Spittlebugs		
IQAQAAA	Stink bugs		
INASDNA	Sweetclover weevil		
IRASADA	Threecornered alfalfa hopper		
IMOAAAA	Thrips		
ITBUAAA	Tortricid moths		
ITBCATA	Velvetbean caterpillar		
ITAAAMA	Webworms		
INBPALA	Green June beetle	0.48-06 lb/A (4% G)	Broadcast soil application. Apply uniformly in damaged fields.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/08020AA	Hops		1 ppm 15 day preharvest interval through 0.8 pound per acre for foliar application.
IRACAAA	Aphids (including hop aphid)	0.25-0.8 lb/A (2-3% D) (2-8 lb/gal EC)	Foliar application.
ILAVAAA	Spider mites (including two-spotted spider mite)		
/13011AA	Kale		1 ppm 7 day preharvest interval through 0.25 pound per acre for foliar application. 10 day preharvest interval from above 0.25 through 0.5 pound per acre for foliar and postplant broadcast soil applications. 15 day preharvest interval on fall and winter crops through 0.5 pound per acre for foliar application. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids (including turnip aphid)	0.15-0.5 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. Apply the lower dosage for aphids and thrips.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
ITBCABA	Cutworms (including climbing cutworms)		
ITBWAFA	Diamondback moth		
ITBCCOA	Fall armyworm		
INAMADA	Flea beetles		
IQAQAKA	Harlequin bug		
ITBJAHA	Imported cabbageworm		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers		
IOACAHA	Seedcorn maggot		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		
ITBCABA	Cutworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Kale (continued)		
IJDAAAA	Symphylans (including garden symphylan)	5 lb/A (2% G)	Preplant broadcast soil application. Incorporate into top 4 to 9 inches of soil immediately after application.
INAVAAA	Wireworms	2.7-4 lb/A (2-25% G) or 3-6 lb/A (4-8 lb/gal EC)	
/13012AA	Kohlrabi		1 ppm 7 day preharvest interval through 0.8 pound per acre for foliar application. 21 day preharvest interval from above 0.8 through 1.5 pounds per acre for foliar and postplant broadcast soil applications.
IRACAAA	Aphids	0.15-0.5 lb/A (1-2% D) (15% WP) or 0.2-0.8 lb/A (2-8 lb/gal EC)	Foliar application. Apply the lower dosage for aphids and thrips.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
ITBCABA	Cutworms (including climbing cutworms)		
ITBWAFA	Diamondback moth		
ITBJAHA	Imported cabbageworm		
IRAFAAA	Leafhoppers		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		
ITBCCSA	Cabbage looper	0.5-1.5 lb/A (4 lb/gal EC)	
ITBCABA	Cutworms	0.6-0.8 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
13020AA	Lettuce		1 ppm 7 day preharvest interval through 0.5 pound per acre (of head lettuce) for foliar application. 14 day preharvest interval through 0.25 pound per acre (of bibb and leaf lettuce) for foliar application. 21 day preharvest interval from above 0.25 through 0.5 pound per acre (of bibb and leaf lettuce) for foliar and postplant broadcast soil applications. Preplant broadcast soil application through 6 pounds per acre.
RACAAAA	Aphids	0.15-0.5 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. For aster leafhoppers, treat field margins also. For leafminers, brown sugar may be added to the dosage of liquid formulations. Apply the higher dosage for corn earworm, diamondback moth, flea beetles, harlequin bug, leafminers, saltmarsh caterpillar and vegetable weevil.
TBCCFA	Armyworm		
TBCBDA	Corn earworm		
NAMACA	Cucumber beetles (including banded cucumber beetle)		
TBWAFA	Diamondback moth		
NAMADA	Flea beetles		
VABAAA	Grasshoppers		
IQAQAKA	Harlequin bug		
ITBJAHA	Imported cabbageworm		
IRAFAAA	Leafhoppers (including aster leafhoppers)		
IMAAAGA	Leafminers (including serpentine leafminer)		
ITAAAOA	Loopers (including alfalfa looper and cabbage looper)		
IQAMARA	Lygus bugs		
ILAAABA	Mites (including spider mites such as twospotted spider mite)		
ITABACA	Saltmarsh caterpillar		
IQAMATA	Tarnished plant bug		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		
ITAAAMA	Webworms		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Lettuce (continued)		
IJBAAA	Centipedes	5-6 lb/A (10% G) or 2.5-6 lb/A (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into soil immediately after application. For symphylans and wireworms, apply into top 4 to 9 inches.
ITBCABA	Cutworms		
IRAWAQA	Ground mealybug		
IRACABA	Root aphids		
IMCAAAA	Springtails		
IJDAAAA	Symphylans (including garden symphylan		
INBPAAA	White grubs		
INAVAAA	Wireworms	3-4 lb/A (2-25% G) (25% WP) or 2.7-6 lb/A (4-8 lb/gal EC)	
ITBCABA	Cutworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		
/13020CA	Lettuce (Greenhouse)		1 ppm 21 day preharvest interval through 0.1 pound per 50,000 cubic feet (for bibb, head and leaf lettuce) for foliar application to greenhouse.
IRACAAA	Aphids	0.1 lb/ 50,000 cu. ft (8 lb/gal EC)	Foliar application to greenhouse grown crops.
IRAFAAA	Leafhopper		
	Loganberry	See Blackberry cluster.	
/06007AA	Mango		1 ppm 21 day preharvest interval through 3 pounds per acre for foliar application.
IMOAAAA	Thrips	0.188-0.5 lb/100 gal (4-8 lb/gal EC)	Foliar application. Consult State Agricultural Extension Service for proper timing.

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/10001AA	Melons		1 ppm 7 day preharvest interval through 0.5 pound per acre for foliar application. Preplant broadcast soil application through 6 pounds per acre. Do not apply before plants start to vine. Do not apply unless plants are dry.
IRACAAA	Aphids	0.15-0.5 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar applications. For melonworm and pickleworm, apply at first bloom or when pests first appear. For squash vine borer, consult your state agricultural experiment station for proper timing of treatments.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
INAMACA	Cucumber beetles (including spotted cucumber beetle and striped cucumber beetle)		
ITBCABA	Cutworms (including climbing cutworms)		
INBUAAA	Darkling beetles		
IQALAHA	False chinch bug		
INAMADA	Flea beetles		
IRAFAAA	Leafhoppers (including beet leafhopper)		
IMAAAGA	Leafminers (including serpentine leafminer)		
ITBMAUA	Melonworm		
ILAAABA	Mites (including spider mites such as petrobia mites and two-spotted spider mite)		
ITBMAWA	Pickleworm		
IQAGAFA	Squash bug		
ITBQADA	Squash vine borer		
IQAQAAA	Stink bugs		
IMOAAAA	Thrips		
IRABAAA	Whiteflies		
ITBCABA	Cutworms	5 lb/A (2-10% G) (25% WP) or 5-6 lb/A (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into soil immediately after application. For symphylans and wireworms, mix granular formulations into top 4 to 9 inches of soil.
IJDAAAA	Symphylans (including garden symphylan)		
INBPAAA	White grubs		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Melons (continued)		
INAVAAA	Wireworms	2-4 lb/A (2% G) (25% WP) or 3-6 lb/A (4-8 lb/gal EC)	
/10008AA	(Watermelon)		
ITAAAIA	Rindworms (including cabbage looper, corn earworm, granulate cutworm and tobacco budworm)	0.5 lb/A (4 lb/gal EC)	Foliar application.
/13021AA	Mustard Greens		0.2 ppm (mustard seed) 1 ppm 7 day preharvest interval through 0.25 pound per acre for foliar application. 10 day preharvest interval from above 0.25 pound through 0.5 pound per acre for foliar and postplant broadcast soil applications. 15 day preharvest interval on fall and winter crops through 0.5 pound per acre for foliar application.
IRACAAA	Aphids (including turnip aphid)	0.15-0.5 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. Apply the lower dosage for aphids and thrips.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
ITBCABA	Cutworms (including climbing cutworms)		
ITBWAFA	Diamondback moth		
INAMADA	Flea beetles		
IQAQAKA	Harlequin bug		
ITBJAHA	Imported cabbageworm		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
IOACAHA	Seedcorn maggot		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Mustard Greens (continued)		
ITBCABA	Cutworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
INBPAAA	White grubs		
INAVAAA	Wireworms		
/03003AA	Nectarine		1 ppm Areas other than CA: 14 day preharvest interval through 4 pounds per acre for foliar or bark application. Do not apply more than 5 pounds per acre per year. Full coverage spray for scale control. CA: 21 day harvest interval through 2.5 pounds per acre for foliar or bark application. Do not apply more than 5 pounds per acre between January 1 and harvest. Do not make more than 1 application after bloom. Do not permit workers to enter the treated area to engage in any activity requiring substantial contact with treated foliage until 21 days have elapsed following last application.
/05004AA	Peach		
ITBMBGA	American plum borer	0.075-0.525 lb/100 gal (15% WP) or 0.125-0.5 lb/100 gal or 1-2.5 lb/A (25% WP) or 0.14-0.5 lb/100 gal or 0.5-2.5 lb/A (2-8 lb/gal EC)	Foliar and bark application. For lecanium scales, apply after all eggs have hatched. For Oriental fruit moth, apply at shuck split, 10 to 12 days later, and if needed 42 and 21 days before harvest. For peachtree borer, apply during appearance of moths in early to late summer. Make 2 or 3 applications to trunk from ground to scaffold limbs timed with moth flight. For shothole borer, apply during the peak of adult activity. For thrips, apply at 25 percent bloom and repeat at 5 to 6 day intervals through petal fall.
IRACAAA	Aphids (including green peach aphid and mealy plum aphid)		
ITANABA	Cankerworms		
IQAAABA	Catfacing insects		
ITBCCZA	Climbing cutworms		
ITBGAZA	Codling moth		
ITBGBOA	Eyespotted bud moth		
IVABAAA	Grasshoppers		
IRAFAAA	Leafhoppers		
IMAAAEA	Leafrollers (including fruit-tree leafroller and redbanded leafroller)		
ITBQALA	Lesser peachtree borer		
IQAMARA	Lygus bugs		
IRAWAAA	Mealybugs		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Nectarine cluster (continued)		
	Pest list continued from previous page.		
ILAAABA	Mites (including spider mites such as clover mite, European red mite, Pacific spider mite, Schoene spider mite, twospotted spider mite, and Willamette spider mite)		
ITBUALA	Orange tortrix		
ITBGAQA	Oriental fruit moth		
ITBUAYA	Pandemis moths		
INBQBKA	Peach bark beetle		
ITAMABA	Peach twig borer		
ITBQAHA	Peachtree borer		
INASAVA	Plum curculio		
IRAAABG	Scales (including cottony peach scale, cottony-cushion scale, lecanium scales, olive scale, and San Jose scale) (crawlers)		
INBQBQA	Shothole borer		
IQAQAAA	Stink bugs		
IQAMATA	Tarnished plant bugs		
IMOAAAA	Thrips		
IRACAAA	Aphids	1-2 lb/A (2% D)	Foliar application.
ITBUAGA	Fruittree leafroller		
ILAAABA	Mites (including brown mite and spider mites such as European red mite and twospotted spider mite)		
ITBGAQA	Oriental fruit moth		
INASAVA	Plum curculio		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Nectarine cluster (continued)		
IRACAAB ILAAABB ITAMABA IRAAABA	Aphids (eggs) Mites (including spider mites) (eggs) Peach twig borer Scales (including European fruit lecanium, olive scale, San Jose scale, and walnut scale)	0.5 lb/100 gal (25% WP) (4-8 lb/gal EC) or 1-2.5 lb/A (25% WP) or 1.5 lb/A (8 lb/gal EC)	Dormant application or delayed dormant application. Tank mix with petroleum distillate.
IRAAABA	Scales (including olive scale and San Jose scale)	0.375-0.5 lb/100 gal (25% WP)	Foliar application. May be tank mixed with petroleum distillate.
/05004AA IRACAAB ITAMABA	(Peach) Aphids (eggs) Peach twig borer	2 lb/20-30 gal (8 lb/gal EC)	Dormant application. Apply by aircraft. Tank mix with petroleum distillate.
INASAVA	Plum curculio	0.2625 lb/100 gal (15% WP)	Foliar application. Tank mix with petroleum distillate.
	Oats	See Barley cluster.	

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	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/15015AA	Okra		1 ppm 21 day preharvest interval through 0.75 pound per acre for foliar and postplant broadcast soil applications.
IRACAAA	Aphids	0.2-0.4 lb/A (1-2% D) or 0.25-0.75 lb/A (25% WP) (2-8 lb/gal EC)	Foliar application. Apply the higher dosage for stink bugs.
INBGAAA	Blister beetles		
INAMADA	Flea beetles		
IMAAAGA	Leafminers (including serpentine leafminer)		
ILAVAAA	Spider mites		
IQAQAAA	Stink bugs		
ITBCABA	Cutworms	0.6-0.75 lb/A (2% G)	Postplant broadcast soil application
INAVAAA	Wireworms		
/28014AA	Olive		1 ppm Do not apply later than August 1 through 5 pounds per acre for foliar application. Do not prune or thin fruit in dense orchards until reasonable time (minimum 14 days) has been allowed for vapors from residues to dissipate.
IRAHBBA	Black scale	0.15 lb/100 gal or 0.3 lb/100 gal (15% WP) or 0.25 lb/100 gal or 0.5-0.625 lb/100 gal or 1-2.5 lb/A (25% WP) or 0.25-0.5 lb/100 gal (8 lb/gal EC) or	Delayed dormant application and foliar application. Apply prebloom and postbloom in late May, early June, and from mid-June to August 1. Use lower per 100 gallon rates for each formulation if tank mixed with petroleum distillate.
IRAKAKA	Oleander scale		
IRAKBPA	Olive scale		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Olive (continued)		
		0.5-0.8 lb/100 gal (2-8 lb/gal EC) or 4-5 lb/A (4-8 lb/gal EC)	
IRAHBBA	Black scale	0.25 lb/100 gal (25% WP) (4 lb/gal EC)	Dormant application. Tank mix with petroleum distillate.
/14011AA	Onions		1 ppm 15 day preharvest interval through 0.8 pound per acre for foliar and postplant broadcast soil applications. Preplant broadcast soil application through 6 pounds per acre. Soil application at planting time through 2 pounds per acre. Do not weed crops by hand after treatment until sufficient time has elapsed for dissipation of harmful vapors.
IRACAAA ILAVAUA ITBCCSA IMAAAGA IOACACA ILAVATA IQAQAAA IMOAAAA	Aphids Brown wheat mite Cabbage looper Leafminers Onion maggot Petrobia mites Stink bugs Thrips (including onion thrips)	0.2-0.8 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. Apply the higher dosage for brown wheat mite.
ITBCABA IJDAAAA INBPAAA	Cutworms Symphylans (including garden symphylans White grubs	6 lb/A (10% G) (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into soil immediately after application. For symphylans and wireworms, apply into top 4 to 9 inches of soil.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Onions (continued)		
INAVAAA	Wireworms	3-4 lb/A (2-25% G) or 2.7-6 lb/A (4-8 lb/gal EC)	
ITBCABA	Cutworms	0.6-0.8 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		
IOACACA	Onion maggot	2 lb/A (2-25% G) (2-8 lb/gal EC)	Soil application (at planting time). Apply in furrow with the seed.
/28035AA	Pastures		1 ppm (grass for forage) 7 day preharvest or pregrazing interval through 0.75 pound per acre for foliar application or 1 pound per acre for broadcast soil application. 15 day pregrazing (or cutting for animal feed) through 1 pound per acre for broadcast soil application.
ITBCCFA	Armyworm	0.5-0.75 lb/A (4-8 lb/gal EC)	Foliar application.
ITBCCOA	Fall armyworm		
IVABAAA	Grasshoppers		
INBPALA	Green june beetle	0.5-1 lb/A (2-25% G)	Broadcast soil application.
		Refer also to Grasses (Forage)	

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28035AA	Pastures (Irrigated)		1 ppm (grass for forage) 7 day preharvest or pregrazing interval through 0.1 pound per acre for foliar application. Do not apply to water drainage areas where runoff or flooding will contaminate ponds, lakes or streams. Keep out of tidal marshes and estuaries. Apply in 5 to 20 gallons of water per acre by aircraft or in 25 to 100 gallons of water per acre by ground equipment unless otherwise specified.
IOAMAAA	Mosquitoes	0.1 lb/A (2-8 lb/gal EC)	Foliar application.
IOAMAAC	Mosquitoes (larvae)	0.1 lb/A (2% G)	Broadcast application. Apply evenly by mechanical broadcaster
/28015AA	Peanuts		1 ppm 15 day preharvest or pregrazing interval through 0.8 pound per acre for foliar application. Soil application through 3 pounds per acre.
ITBCBOA	Corn earworm	0.2-0.5 lb/A (1-2% D) or 0.5 lb/A (2-8 lb/gal EC) or 0.5-0.8 lb/A (4 lb/gal EC)	Foliar application. Apply the higher dosage for rednecked peanutworm.
ITBCABA	Cutworms (including climbing cutworms)		
ITBCCOA	Fall armyworm		
IVABAAA	Grasshoppers		
IRAFAAA	Leafhoppers		
ITAMATA	Rednecked peanutworm		
ITABACA	Saltmarsh caterpillar		
ILAVAAA	Spider mites		
IRASADA	Threecornered alfalfa hopper		
IMOAAAA	Thrips		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Peanuts		
	Pest list continued from previous page.		
ITBCATA	Velvetbean caterpillar		
ITAAAMA	Webworms		
INAMBHC	Corn rootworms (larvae) (including southern corn rootworm)	2-2.6 lb/A (2-25% G) (4-8 lb/gal EC)	Soil application (at planting time or pegging). Apply as a row soil treatment. Incorporate lightly into soil. For southern corn rootworm, apply as a preplant broadcast soil application and incorporate into top 4 to 6 inches of soil, or apply as a band treatment over the fruiting zone just prior to pegging.
ITBMBDA	Lesser cornstalk borer	0.5 lb/A (2-8 lb/gal EC)	Soil application. Apply to base of plants and soil surface.
		2-2.67 lb/A (10% G)	Soil application (prepegging or postpegging). Apply in a 12 to 15 inch band over the row. If applied prior to pegging, incorporate into top few inches of soil. If applied after pegging, apply before irrigation and thoroughly water into the soil.
INBPAAA	White grubs	2 lb/A (10% G)	Preplant broadcast soil application. Incorporate into top 3 inches of soil.
INAVAAA	Wireworms	2-3 lb/A (10% G)	Soil application (at planting time or at pegging). Incorporate lightly into soil.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/04003AA	**Pear**		1 ppm 14 day preharvest interval through 3.5 pounds per acre for foliar or bark application. Injury may occur to Bosc, Anjou, or Comice pears under certain conditions, especially in the Northeast United States.
IRACAAA	Aphids	0.4-1.5 lb/A (1-3% D)	Foliar application.
IRAWAAA	Mealybugs		
ILAAABA	Mites		
IRAXALA	Pear psylla		
ILAVAAA	Spider mites (including two-spotted spider mites)		
IRACAAA	Aphids (including apple aphid, rosy apple aphid, and woolly apple aphid)	0.075-0.5 lb/100 gal (15-25% WP) or 0.5-3 lb/A (25% WP) or 0.17-0.5 lb/100 gal (2-8 lb/gal EC) or 0.75-3.5 lb/A (4-8 lb/gal EC)	Delayed dormant application and foliar application. For aphids, apply during prepink stage, pink stage, petal fall, or when pests first appear. Repeat at 10 to 14 day intervals or as needed. For eyespotted bud moth, apply during prebloom period if pest is a serious problem and satisfactory control is not resulting from regular spray program. For pear psylla, apply either prebloom or postbloom. For pearleaf blister mite, apply prebloom.
IQAMAOA	Apple red bug		
ITANABA	Cankerworms		
ITBGAZA	Codling moth		
ITBGBOA	Eyespotted bud moth		
IVABAAA	Grasshoppers		
ITBCBSA	Green fruitworm		
ITBMAEA	Leaf crumpler		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer and tentiform leafminer)		
IMAAAEA	Leafrollers (including fruit-tree leafroller and redbanded leafroller)		
IRAWAAA	Mealybugs		
ILAAABA	Mites (including brown mite and spider mites such as clover mite, European red mite, Pacific spider mite, Schoene spider		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Pear (continued)		
	Pest list continued from previous page.		
	mite, twospotted spider mite, and Willamette spider mite)		
ITBUALA	Orange tortrix		
ITBGAQA	Oriental fruit moth		
IRAXALA	Pear psylla		
ILAJAWA	Pearleaf blister mite		
IQAMAAA	Plant bugs (including tarnished plant bug)		
INASAVA	Plum curculio		
ISAAABA	Sawflies (including pear sawfly)		
IRAAABG	Scales (including European fruit lecanium, Forbes scale, olive scale, San Jose scale, and scurfy scale)(crawlers)		
INBQBQA	Shothole borer		
IMOAAAA	Thrips		
IRACAAB	Aphids (eggs)	0.5 lb/100 gal (25% WP) (4 lb/gal EC) or 0.75-3 lb/A (25% WP)	Dormant application or delayed dormant application. Tank mix with petroleum distillate.
IMAAAEA	Leafrollers		
ILAAABB	Mites (including spider mites) (eggs)		
IRAXALA	Pear psylla		
IRAAABA	Scales (including European fruit lecanium and San Jose scale)		
IRACAAA	Aphids (including apple aphid, rosy apple aphid, and woolly apple aphid)	0.15-0.25 lb/ 100 gal (25% WP)	Dormant application. Tank mix with petroleum distillate.
IRAXALA	Pear psylla		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Pear (continued)		
IRAAABG	Scales (including European fruit lecanium, Forbes scale, and San Jose scale) (crawlers)	0.25-0.33 lb/100 gal (25% WP)	Dormant application. Use lower rate if tank mixed with petroleum distillate.
/28016AA	Peas		1 ppm (peas and pea forage) 10 day preharvest interval through 0.5 pound per acre (on peas) for foliar application. 15 day preharvest interval through 0.5 pound per acre (on pea forage) for foliar application. Preplant broadcast soil application through 6 pounds per acre.
ITBCAVA	Alfalfa looper	0.13-0.5 lb/A (1-3% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. For pea weevil, apply during early bloom period before eggs are laid and repeat in 5 days. Apply the higher dosage for alfalfa looper, armyworm, climbing cutworms, flea beetles, lygus bugs and stink bugs.
IRACAAA	Aphids (including pea aphid)		
ITBCCFA	Armyworm		
INAMARA	Bean leaf beetle		
ITBCARA	Celery looper		
ITBCABA	Cutworms (including climbing cutworms)		
INAMADA	Flea beetles		
IRAFAAA	Leafhoppers (including potato leafhopper)		
IMAAAGA	Leafminers (including serpentine leafminer)		
IMAAAEA	Leafrollers		
IQAMARA	Lygus bugs		
INAPAFA	Mexican bean beetle		
ILAAABA	Mites (including spider mites such as two-spotted spider mite)		
ITBGAYA	Pea moth		
INAGADA	Pea weevil		
IQAQAAA	Stink bugs		
IMOAAAA	Thrips		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Peas (continued)		
	Pest list continued from previous page.		
ITBCATA	Velvetbean caterpillar		
ITAAAMA	Webworms		
IRABAAA	Whiteflies		
ITBCABA	Cutworms	6 lb/A (4 lb/gal EC)	Preplant broadcast soil application. Incorporate into soil immediately after application. For symphylans and wireworms, mix granular formulations into top 4 to 9 inches of soil.
INBPAAA	White grubs		
IJDAAAAA	Symphylans (including garden symphylan)	5-6 lb/A (2% G) (25% WP) (4-8 lb/gal EC)	
INAVAAA	Wireworms	2-4 lb/A (2-10% G). (25% WP) or 2.7-6 lb/A (4-8 lb/gal EC)	
/03008AA	Pecan		0.1 ppm 15 day preharvest interval through 2.5 pounds per acre for foliar application. Do not apply after husks open. Do not feed treated husks to livestock.
IRACAAA	Aphids (including black pecan aphid and yellow pecan aphid)	0.25-1 lb/100 gal (15-25% WP) (2-8 lb/gal EC) or 1-2.5 lb/A (25% WP) or 0.25-1 lb/A [100 gal/A] (4 lb/gal EC)	Foliar application. For pecan leaf casebearer and twig girdler, make 3 to 5 applications at 14 to 21 day intervals. For pecan nut casebearer, apply in the third cover spray, approximately when the tips of small nuts have turned brown. First application should be made before first generation larvae enter nuts. Repeat in 7 days and in subsequent cover sprays as needed. For walnut caterpillar and walnut webworm, apply when larvae appear and are still small.
ITBGAZA	Codling moth		
ITABAIA	Fall webworm		
IRAHAPA	Frosted scale		
INBPAEA	May beetles		
ILAAABA	Mites		
ITBMAFA	Pecan leaf casebearer		
ITBMADA	Pecan nut casebearer		
IRAEAAA	Spittlebugs		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Pecans (continued)		
	Pest list continued from previous page.		
INALBCA	Twig girdler		
ITBDABA	Walnut caterpillar		
IRACDSA	Black pecan aphid	0.6-0.7 lb/A (1-2% D)	Foliar application. Apply to thoroughly cover trees.
/28017AA	Peppers		1 ppm 15 day preharvest interval through 0.8 pound per acre for foliar and postplant broadcast soil applications. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids	0.2-0.8 lb/A (1-2% D) or 0.15-0.8 lb/A (15-25% WP) or 0.125-0.8 lb/A (2-8 lb/gal EC)	Foliar application.
ITBCCFA	Armyworm		
INAMCFA	Colorado potato beetle		
ITBCBOA	Corn earworm		
ITBCABA	Cutworms (including climbing cutworms)		
INAMADA	Flea beetles (including western potato flea beetle)		
IVABAAA	Grasshoppers		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
ITAAAOA	Loopers		
ILAAABA	Mites (including spider mites such as two-spotted spider mite)		
IOBMATA	Pepper maggot		
IRAXAAA	Psyllids		
IMOAAAA	Thrips		
IRABAAA	Whiteflies		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Peppers (continued)		
ITBCABA INBDAAA	Cutworms White grubs	6 lb/A (10% G) (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into soil immediately after application. For symphylans and wireworms, apply into top 4 to 9 inches of soil.
IJDAAAA	Symphylans (including garden symphylan)	5-6 lb/A (2% G) (25% WP) (4-8 lb/gal EC)	
INAVAAA	Wireworms	2-4 lb/A (2-25% G) (25% WP) or 2.7-6 lb/A (4-8 lb/gal EC)	
ITBCABA INAVAAA	Cutworms Wireworms	0.6-0.8 lb/A (2% G)	Postplant broadcast soil application.
/06013AA	Pineapple		1 ppm 7 day preharvest interval through 0.75 pound per acre for foliar application.
IVAHAAA IRAWAAA	Crickets Mealybugs	0.14-0.75 lb/ 100 gal (2-8 lb/gal EC)	Foliar application.
IRAWAAA	Mealybugs	0.14-0.188 lb/100 gal (6-8 lb/gal EC)	Dip treatment. Prepare a new dip after treating 600 plants. Wear full length rubber gloves to prevent contact of dip with skin. When handling treated plants wear rubber gloves and protective clothing to prevent skin contact with residual parathion.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/05005AA	Plum		1 ppm 14 day preharvest interval through 4 pounds per acre for foliar application or bark application.
/05006AA	Prune		
IRACAAA	Aphids (including mealy plum aphid)	1-1.3 lb/A (2% D)	Foliar application
IRAFAAA	Leafhoppers		
ILAAABA	Mites		
INASAVA	Plum curculio		
IRACAAA	Aphids (including mealy plum aphid)	0.075-0.5 lb/ 100 gal (15-25% WP) or 0.75-3 lb/A (25% WP) or 0.125-0.5 lb/ 100 gal or 0.5-4 lb/A (2-8 lb/gal EC)	Foliar application. Twenty five percent wettable powder formulation may be tank mixed with petroleum distillate for scale (crawlers) control, but do not apply if temperatures exceed 90 F (32.2 C).
ITANABA	Cankerworms		
IOBMALA	Cherry fruit fly		
ITBGAZA	Codling moth		
ITBGBOA	Eyespotted bud moth		
ITBMAEA	Leaf crumpler		
IRAFAAA	Leafhoppers		
IMAAAEA	Leafrollers (including fruittree leafroller and redbanded leafroller)		
IRAWAAA	Mealybugs		
ILAAABA	Mites (including spider mites such as clover mite, European red mite, Pacific spider mite, Schoene spider mite, two-spotted spider mite, and Willamette spider mite)		
ITBUALA	Orange tortrix		
ITBGAQA	Oriental fruit moth		
ITAMABA	Peach twig borer		
ITBQAHA	Peachtree borer		
INASAVA	Plum curculio		
IRAAABG	Scales (including Forbes scale, oleander scale, olive scale, and San Jose scale) (crawlers)		
INBQBQA	Shothole borer		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Prune (continued)		
	Pest list continued from previous page.		
ITAUADA	Tent caterpillars		
IMOAAAA	Thrips (including flower thrips and pear thrips)		
ITAXAAA	Tussock moths		
IRACAAB	Aphids (including leafcurl plum aphid and mealy plum aphid) (eggs)	0.5 lb/100 gal (25% WP) (4-8 lb/gal EC) or 1.75-3.75 lb/A (25% WP) or 1.5 lb/A (8 lb/gal EC)	Dormant application or delayed dormant application. Tank mix with petroleum distillate.
ILAAABB	Mites (including spider mites) (eggs)		
ITAMABA	Peach twig borer		
IRAAABA	Scales (including black scale, European fruit lecanium, olive scale, and San Jose scale)		
/05006AA	(Prune)		
IRACAAB	Aphids (eggs)	2 lb/20-30 gal (8 lb/gal EC)	Dormant application. Apply by aircraft. Tank mix with petroleum distillate.
ITAMABA	Peach twig borer		
/14013AA	Potato		0.1 ppm 5 day preharvest interval through 1 pound per acre for foliar application or 0.8 pound per acre for postplant broadcast soil application. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids	0.2-1 lb/A (1-2% D) (15-25% WP) (2-8 l/gal EC)	Foliar application. Apply the higher dosage for tomato russet mite, potato psyllid and potato tuberworm.
ITBCCFA	Armyworm		
INBGAAA	Blister beetles		
INAMCFA	Colorado potato beetle		
INAMACA	Cucumber beetles (including banded cucumber beetles)		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Potato (continued)		
	Pest list continued from previous page.		
ITBCABA	Cutworms (including climbing cutworms)		
INAMADA	Flea beetles		
IVABAAA	Grasshoppers		
IQAGAEA	Leaffooted bug		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
ITAAAOA	Loopers (including cabbage looper)		
ILAAABA	Mites [including spider mites (mainly tomato russet mite and twospotted spider mite)]		
IQAMAAA	Plant bugs		
IRAXAHA	Potato psyllid		
ITAMAPA	Potato tuberworm		
IQAQAAA	Stink bugs (including green stink bug)		
IMOAAA	Thrips		
INASCCA	Vegetable weevil		
IRABAAA	Whitefiles		
ITBCABA INAVAAA	Cutworms Wireworms	0.6-0.8 lb/A (2% G)	Postplant broadcast soil application.
IJDAAAA	Symphylans (including garden symphylan)	5 lb/A (2-25% G) (25% WP) (4-8 lb/gal EC)	Soil application (preplant or at planting time). Incorporate into top 6 to 9 inches of soil.
INAVAAA	Wireworms (including southern potato wireworm	2-6 lb/A (2-25% G) (25% WP) (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into top 4 to 9 inches of soil.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Potato (continued)		
		3 lb/A (2-25% G)	Soil application (band). Apply as a band to both sides of the row at time of fertilizer side dress treatment.
		3-4 lb/A (10% G)	Soil application (at planting time). Apply as a row treatment and cultivate into soil.
/10011AA	Pumpkin		1 ppm 10 day preharvest interval through 0.5 pound per acre for foliar application.
IRACAAA	Aphids	0.2-0.5 lb/A (1-2% D) (25% WP) (2-8 lb/gal EC)	Foliar application. For melonworm and pickleworm, apply at first bloom or when pests first appear. For squash vine borer, consult your state agricultural experiment station for proper timing of treatments.
INAMACA	Cucumber beetles		
ITACABA	Cutworms (including climbing cutworms)		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
ITBMAUA	Melonworm		
ITBMAWA	Pickleworm		
ILAVAAA	Spider mites		
IQAGAFA	Squash bug		
ITBQADA	Squash vine borer		
IQAQAAA	Stink bugs		
IMOAAAA	Thrips		
IRABAAA	Whiteflies		
/04004AA	Quince		1 ppm 14 day preharvest interval through 3.6 pounds per acre for foliar application.
IRACAAA	Aphids	0.3-0.375 lb/100 gal (4-6 lb/gal EC)	Foliar application.
IRAHALA	European fruit lecanium		
ITBGAQA	Oriental fruit moth		
INASAVA	Plum curculio		
INASAUA	Quince curculio		
ILAVAAA	Spider mites		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/14014AA	Radish		1 ppm (with or without tops or greens alone) 15 day preharvest interval through 0.5 pound per acre for foliar and postplant broadcast soil applications. Preplant broadcast soil application through 5 pounds per acre.
IRACAAA ITBCCSA ITBWAFA IQALAHA IQAQAKA IMAAAGA IMOAAAA	Aphids Cabbage looper Diamondback moth False chinch bug Harlequin bug Leafminers Thrips	0.25-0.5 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. Apply the higher dosage for cabbage looper and diamondback moth.
ITBCABA INAVAAA	Cutworms Wireworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
IJOAABA	Garden symphylan	5 lb/A (25% WP)	Preplant broadcast soil application. Incorporate into soil immediately after application. Apply into top 4 to 9 inches of soil.
INAVAAA	Wireworms	2-4 lb/A (25% WP)	
/28051BA	Rape (Seed Crop)		0.2 ppm (rape seed) Foliar application to seed crop through 1 pound per acre. Do not graze treated field or feed foliage or trash to livestock. If treatment is needed during bloom, treat only from evening to morning to protect bees. Do not apply later than 3 hours after sunrise.
INASAOA	Cabbage seedpod weevil	0.5-1 lb/A (8 lb/gal EC)	Use limited to areas other than CA. Foliar application to seed crop. Make first application when 2 or more weevils are found per plant on young pods. Apply the higher dosage during cool weather or when infestations are heavy.
	Raspberry	See Blackberry cluster.	

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28072AA	Rice		1 ppm 1 day preharvest interval through 0.1 pound per acre for foliar or broadcast applications. Unless otherwise specified, apply liquid formulation in a minimum of 8 gallons of water per acre by aircraft or in a minimum of 25 gallons of water per acre by ground equipment. Do not apply to water drainage areas where runoff or drainage will contaminate lakes, ponds or streams. Keep out of tidal marshes and estuaries. Restrict spill from rice fields for 2 days following application. Do not use within 14 days of application of 3',4-dichloripropionanalide. Do not apply over canals or laterals.
IOAMAAA	Mosquitoes	0.1 lb/A (2-8 lb/gal EC)	Foliar application.
IOAMAAC	Mosquitoes (larvae)	0.1 lb/A (2-5% G)	Broadcast application. Apply evenly by mechanical broadcaster.
IOARABA IIBAABA	Rice leafminer Tadpole shrimp	0.1 lb/A (2-8 lb/gal EC)	Foliar application. Apply at the first sign of infestation after planting. For rice leafminer, apply for thorough coverage when eggs and larvae are abundant on seedling rice.

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	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/14015AA	Rutabaga		1 ppm (with or without tops or greens alone) 7 day preharvest interval through 0.75 pound per acre for foliar application. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids	0.15-0.75 lb/A (1-2% D) (15% WP) (2-8 lb/gal EC)	Foliar application. Apply the lower dosage for aphids and thrips.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
ITBCABA	Cutworms (including climbing cutworms)		
ITBWAFA	Diamondback moth		
ITBJAHA	Imported cabbageworm		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		
IJDAAAA	Symphylans (including garden symphylan)	5 lb/A (2% G)	Preplant broadcast soil application. Incorporate into top 4 to 9 inches of soil immediately after application.
INAVAAA	Wireworms	2.7-4 lb/A (2-25% G) or 3-6 lb/A (4-8 lb/gal EC)	
/28076AA	Safflower		0.1 ppm (safflower seed) Do not apply after flowering through 0.5 pound per acre for foliar application.
IRACAAA	Aphids	0.5 lb/A (2% D) (2-8 lb/gal EC)	Foliar application.
IVABAAA	Grasshoppers		
ITAAAOA	Loopers		
IQAMARA	Lygus bugs		
IMOAAAA	Thrips		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28019AA	Sorghum		0.1 ppm 3 ppm (sorghum fodder and forage) 12 day preharvest interval through 1 pound per acre for foliar application. Leaf injury may occur to some hybrid varieties. Spray a few rows a week before booting stage to test effects on plants.
IRACAAA	Aphids (including corn leaf aphid and greenbug)	0.25-1 lb/A (25% WP) (2-8 lb/gal EC)	Foliar application. Apply the higher dosage for greenbug, fall armyworm, chinch bug, corn earworm and sorghum webworm.
ITBCCFA	Armyworm		
IQALAEA	Chinch bug		
ITBCBOA	Corn earworm		
INAMBHJ	Corn rootworms (adults)		
ITBMCOA	European corn borer		
ITBCCOA	Fall armyworm		
IQALAHA	False chinch bug		
IVABAAA	Grasshoppers		
ILAAABA	Mites		
ITBCBAA	Sorghum webworm		
IRACDKA	Corn leaf aphid	0.25-0.5 lb/A (10% G) (4 lb/gal EC)	Foliar application. Apply by aircraft only.
IRACDNA	Greenbug		
IOAHAIA	Sorghum midge	0.5-1 lb/A (25% WP) (2-8 lb/gal EC)	Foliar application. Apply twice at 3 to 5 days apart when approximately 90 percent of the heads have completely emerged from the boot, but do not apply later than the start of blooming.

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28023AA	Soybeans		0.1 ppm (soybeans) 1 ppm (hay) 20 day preharvest interval through 0.8 pound per acre for foliar application or 1.5 pounds per acre for postplant soil application. Preplant broadcast soil application through 4 pounds per acre. Do not make more than 2 applications during the growing season.
ITBCBOA	Corn earworm	0.5-0.8 lb/A (2-8 lb/gal EC)	Foliar application.
ITBCCOA	Fall armyworm		
IVABAAA	Grasshoppers	0.2-0.5 lb/A (1-2% D) (2-8 lb/gal EC)	
ITBCCCA	Green cloverworm		
IQAQAAA	Stink bugs		
IMOAAAA	Thrips		
ILAVBEA	Twospotted spider mite		
ITBCATA	Velvetbean caterpillar		
ITAAAMA	Webworms	0.125-0.25 lb/A (2-8 lb/gal EC)	
ITBMBDA	Lesser cornstalk borer	1-1.5 lb/A (8 lb/gal EC)	Soil application. Direct spray to soil surface and base of plants.
INBPAAA	White grubs	2.7-4 lb/A (2-25% G) (2-8 lb/gal EC)	Preplant broadcast soil application. For white grubs, incorporate into top 4 to 6 inches of soil. For wireworms, incorporate into top 4 to 9 inches of soil.
INAVAAA	Wireworms		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/13024AA	Spinach		1 ppm 14 day preharvest interval through 0.5 pound per acre for foliar and postplant broadcast soil applications. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids	0.15-0.5 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. Apply the higher dosage for cabbage looper, flea beetles, harlequin bug, seedcorn maggot, thrips and webworms. For seedcorn maggot, apply in the crown.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
INAMADA	Flea beetles		
IQAQAKA	Harlequin bug		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
ILAAABA	Mites (including crown mite and spider mites)		
IOACAHA	Seedcorn maggot		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		
ITAAAMA	Webworms		
IRABAAA	Whiteflies		
ITBCABA	Cutworms	6 lb/A (10% G) (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into soil immediately after application. For symphylans and wireworms, apply into top 4 to 9 inches of soil.
INBPAAA	White grubs		
IJDAAAA	Symphylans (including garden symphylan)	2-4 lb/A (25% WP) or	
INAVAAA	Wireworms	3-6 lb/A (4-8 lb/gal EC)	
ITBCABA	Cutworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
10012AA	Squash		1 ppm 15 day preharvest interval through 0.5 pound per acre for foliar and postplant broadcast soil applications. Preplant broadcast soil application through 5 pounds per acre. Do not apply before plants start to vine. Do not apply unless plants are dry.
IRACAAA	Aphids	0.15-0.5 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. For melonworm and pickleworm, apply at first bloom or when pests first appear. For squash vine borer, consult your state agricultural experiment station for proper timing of treatments. Apply the higher dosage for flea beetles, leafhoppers and squash bug.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
INAMACA	Cucumber beetles (including spotted cucumber beetle and striped cucumber beetle)		
ITBCABA	Cutworms (including climbing cutworms)		
INBUAAA	Darkling beetles		
INAMADA	Flea beetles		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
IQAMARA	Lygus bugs		
ITBMAUA	Melonworm		
ILAAABA	Mites (including spider mites such as two-spotted spider mite)		
ITBMAWA	Pickleworm		
IQAGAFA	Squash bug		
ITBQADA	Squash vine borer		
IQAQAAA	Stink bugs		
IMOAAAA	Thrips		
IRABAAA	Whiteflies		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Squash (continued)		
ITBCABA	Cutworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
INBPAAA	White grubs		
INAVAAA	Wireworms		
IJDAAAA	Symphylans (including garden symphylan)	5 lb/A (25% WP)	Preplant broadcast soil applications. Incorporate into soil immediately after application. For symphylans, apply into top 6 to 9 inches of soil. For wireworms, apply into top 4 to 6 inches of soil.
INAVAAA	Wireworms	2-4 lb/A (25% WP)	
/01016AA	Strawberry		1 ppm 14 day preharvest interval through 0.8 pound per acre for foliar application.
IRACAAA	Aphids	0.113-0.263 lb/100 gal or 0.75 lb/A (15% WP) or 0.188-0.5 lb/100 gal or 0.375-0.8 lb/A (25% WP) or 0.188-0.8 lb/A (2-8 lb/gal EC) or 0.188-0.8 lb/100 gal (4-8 lb/gal EC)	Foliar application.
IVAHAAA	Crickets (including field crickets)		
INAMADA	Flea beetles		
IRAFAAA	Leafhoppers		
IMAAAEA	Leafrollers (including strawberry leafroller)		
ITBMBOA	Lesser cornstalk borer		
IQAMARA	Lygus bugs		
ILAAABA	Mites (including spider mites)		
ITBUAWA	Omniverous leaftier		
IQALAJA	Pameras		
IRAFAJA	Potato leafhopper		
IRAEAAA	Spittlebugs		
INASEGA	Strawberry crown borer		
INAMDJA	Strawberry leaf beetles		
INASCQA	Strawberry root weevil		
IMOAAAA	Thrips (including flower thrips)		
IRABAAA	Whiteflies		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Strawberry (continued)		
ITBCABA	Cutworms	0.6-0.8 lb/A (2% G) or 2-5 lb/A (10% G) [bait]	Use of 10 percent granular formulation limited to FL. Preplant broadcast soil application. May be applied by aircraft. Apply 14 to 21 days before planting and immediately incorporate into top 6 inches of soil. Use lower dosage for mineral soils and higher dosage for organic soils.
INAVAAA	Wireworms		
IJDAABA	Garden symphylans	5 lb/40 gal/A (2-8 lb/gal EC)	Preplant soil application.
INASCQJ	Strawberry root weevil (adults)	0.375-1 lb/100 gal (4-8 lb/gal EC)	Postharvest application. Apply immediately after harvest and repeat in 10 days.
INASCQC	Strawberry root weevil (larvae)	0.375 lb/100 gal (8 lb/gal EC)	Preplant broadcast soil application. Incorporate into top 6 to 8 inches of soil.
/28020AA /28020BA	Sugar Beets (including Sugar Beets (Seed Crop))		0.1 ppm (sugar beets and sugar beet tops) 15 day preharvest interval through 0.8 pound per acre for foliar application. 21 day preharvest interval (tops) through 0.8 pound per acre for foliar application. Preplant broadeast soil application through 5 pounds per acre. Do not apply after plants begin to flower.
ITBCAVA	Alfalfa looper	0.5-0.8 lb/A (2-3% D) or 0.3-0.8 lb/A (15-25% WP) (2-8 lb/gal EC)	Foliar application. For sugarbeet crown borer, apply with ground equipment over the row during seedling stage. Apply the higher dosage for false celery leaftier and sugarbeet crown borer.
IRACAAA	Aphids		
ITBCCFA	Armyworm		
INBGAAA	Blister beetles		
IVAHAAA	Crickets		
ITBCABA	Cutworms (including climbing cutworms)		
ITBMCPA	False celery leaftier		
INAMADA	Flea beetles		
IVABAAA	Grasshoppers		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Sugar Beets (including Sugar Beets (Seed Crop)) (continued)		
	Pest list continued from previous page.		
IRAFAAA	Leafhoppers (including serpentine leafminer)		
IQAMARA	Lygus bugs		
ILAAABA	Mites (including spider mites)		
IQAQAAA	Stink bugs		
ITBMBQA	Sugarbeet crown borer		
ITAAAMA	Webworms (including beet webworm)		
IJDAAAA	Symphylans (including garden symphylan)	5 lb/A (2-25% G) (4-8 lb/gal EC)	Preplant broadcast soil application or apply at time of planting. Incorporate into top 6 to 9 inches of soil.
INBPAAA INAVAAA	White grubs Wireworms	2.7-4 lb/A (2-25% G) (2-8 lb/gal EC)	Preplant broadcast soil application. For white grubs, incorporate into top 4 to 6 inches of soil. For wireworms, incorporate into top 4 to 9 inches of soil.
/25003AA	Sugarcane		0.1 ppm (sugarcane, sugarcane forage and fodder) Soil application through 6 pounds per acre.
ITBCABA IVAIAAA INBPAAA	Cutworms Mole crickets White grubs	5 lb/A (8 lb/gal EC)	Preplant broadcast soil applications. For wireworms, incorporate into top 4 to 9 inches of soil.
INAVAAA	Wireworms	2.7-4 lb/A (2-25% G) (4-8 lb/gal EC)	Soil application (at planting time). Apply emulsifiable concentrate formulation in a 10 to 12 inch band in open furrow. Apply granular formulation to seed pieces in furrow.
		5-6 lb/A (10% G) or 2 lb/A (2-8 lb/gal EC)	

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28021AA	Sunflower		0.2 ppm (sunflower seed) 30 day preharvest interval through 1 pound per acre for foliar application.
ITBMBPA	Sunflower moth	0.5-1 lb/A (8 lb/gal EC)	Foliar application. Apply 2 or 3 times at 5 day intervals. Hybrid sunflowers completely bloom in 12 to 15 days thus the initial application should be made at onset of flowering or before 10 to 20 percent of plants begin to flower and moth and young larvae are present.
/14018AA	Sweet Potato		0.1 ppm 15 day preharvest interval through 1 pound per acre for foliar application. Preplant broadcast soil application through 5 pounds per acre.
IRACAAA	Aphids	0.5 lb/A (2% D) or 0.5-1 lb/A (2-8 lb/gal EC)	Foliar application. Apply the higher dosage for flea beetles.
INBGAAA	Blister beetles		
INAMCFA	Colorado potato beetle		
INAMADA	Flea beetles		
IVABAAA	Grasshoppers		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including morning glory leafminer and serpentine leafminer)		
ILAVAAA	Spider mites		
IQAQAAA	Stink bugs		
INAVAAA	Wireworms	2-4 lb/A (2-25% G) or 3-5 lb/A (4-8 lb/gal EC)	Preplant broadcast soil application. Incorporate into top 4 to 9 inches of soil.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/13025AA	Swiss Chard		1 ppm 21 day preharvest interval through 0.5 pound per acre for foliar application.
IRACAAA	Aphids	0.2-0.3 lb/A (1-2% D) or 0.5 lb/A (25% WP) (4-8 lb/gal EC)	Foliar application. For seedcorn maggot, apply to crowns.
ILABAHA	Crown mite		
IMAAAGA	Leafminers(including serpentine leafminer)		
IOACAHA	Seedcorn maggot		
INASCCA	Vegetable weevil		
/26003DA	Tobacco (to be transplanted)		N.F. Rubber gloves and protective clothing should be worn when transplanting plants if an application has been made within 30 days.
ISASAAA	Ants	0.005-0.2 lb/ 100 sq.yd (1-2% D) or 0.003-0.075 lb/100 sq.yd or 0.15-0.17 lb/ 100 gal (15-25% WP) or 0.04-0.17 lb/ 100 sq.yd (4-8 lb/gal EC)	Foliar application and soil application. Apply dust formulations by aircraft or rotary hand duster only. Do not use shaker can or cloth bag. For aphids, crane fly (larvae), flea beetles, and midges; make 1 to 4 applications as needed. For flea beetles, apply when holes are first found in leaves. For crane fly (larvae) and midges, apply to burrowed areas of soil.
IRACAAA	Aphids(icluding green peach aphid)		
IOBNAAC	Crane flies(larvae)		
IVAHAAA	Crickets		
INBUAAA	Darkling beetles		
INAMADA	Flea beetles		
IVABAAA	Grasshoppers		
INBPALC	Green June beetle (larvae)		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers		
IOAKAAC	Midges (larvae)		
ITAMAPA	Potato tuberworm		
IQAMAFA	Suckfly		
IMOAAAA	Thrips		
ITBCBNA	Tobacco budworm		
ITBRAKA	Tobacco hornworm		
INASCCA	Vegetable weevil		
INBPALC	Green June beetle (larvae)	0.1 lb/ 100 sq.yd (10% G)	Soil application to seed bed. For midges, make 1 to 4 applications as needed.
IOAKAAC	Midges (larvae)		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/26003AA	Tobacco		N.F. 5 day preharvest interval (by priming) through 0.5 pound per acre for foliar application. 15 day preharvest interval (by cutting) through 0.5 pound per acre for foliar application. Avoid contact with plant juices when priming or cutting tobacco. Rubber gloves and protective clothing should be worn when transplanting plants if an application has been made within 30 days.
IRACAAA	Aphids(including green peach aphid)	0.1-0.5 lb/A (1-2% D) or 0.15-0.25 lb/ 100 gal or 0.078-0.75 lb/A (15-25% WP) 100 sq.yd or 0.15-0.17 lb/ 100 gal (15-25% WP) or 0.078-0.75 lb/A (2-8 lb/gal EC) or 0.188-0.5 lb/ 100 gal (4-8 lb/gal EC)	Foliar application. Apply dust formulations by aircraft or power duster only. For aphids and flea beetles, repeat at 5 to 7 day intervals as needed.
IOBNAAC	Crane flies(larvae)		
IVAHAAA	Crickets		
INBUAAA	Darkling beetles		
INAMADA	Flea beetles		
IVABAAA	Grasshoppers		
INBPALC	Green June beetle (larvae)		
INBPAZJ	Japanese beetle (adults)		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers		
IOAKAAC	Midges (larvae)		
ITAMAPA	Potato tuberworm		
IQAQAAA	Stinkbugs		
IQAMAFA	Suckfly		
IMOAAAA	Thrips		
ITBCBNA	Tobacco budworm		
ITBRAKA	Tobacco hornworm		
INASCCA	Vegetable weevil		
INAVAAA	Wireworms(including sand wireworm, southern potato wireworm, and tobacco wireworm)	1 lb/A (2% D) or 2-6 lb/A (2-20% G)	Preplant broadcast soil application. For general wireworm control, apply 7 to 28 days prior to setting and incorporate into the top 4 to 9 inches of soil immediately. For sand wireworm, apply 7 to 14 days prior to setting and incorporate into top 3 to 6 inches of soil immediately after application. For southern

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Tobacco (continued)		
		1-3 lb/A (4-8 lb/ gal EC)	potato wireworm, apply 7 to 28 days prior to setting and incorporate into top 3 to 6 inches of soil immediately after application. For tobacco wireworm, apply 7 to 28 days prior to setting and incorporate into soil lightly. Do not apply in transplant water.
/11005AA	Tomato		1 ppm 10 day preharvest interval through 1 pound per acre for foliar application or 0.8 pound per acre for postplant broadcast soil application. Preplant broadcast soil application through 6 pounds per acre.
IRACAAA	Aphids	0.2-1 lb/A (1-3% D) or 0.15-1 lb/A 15-25% WP) (2-8 1/gal EC)	Foliar application. Apply the higher dosage for armyworm, tomato fruitworm, tomato hornworm, tomato pinworm, and vegetable weevil.
ITBCCFA	Armyworm		
INBGAAA	Blister beetles		
INAMCFA	Colorado potato beetle		
INAMACA	Cucumber beetles (including banded cucumber beetles)		
INBUAAA	Darkling beetles		
INAMADA	Flea beetles		
IVABAAA	Grasshoppers		
IQAGAEA	Leaffooted bug		
IRAFAAA	Leafhoppers		
IMAAAGA	Leafminers (including serpentine leafminer)		
ITAAAOA	Loopers		
ILAAABA	Mites (including spider mites such as tomato russet mite and twospotted spider mite)		
IOBMATA	Pepper maggot		
IQAMAAA	Plant bugs		
IRAXAAA	Psyllids (including tomato psyllid)		
IQAQAAA	Stink bugs		
IMOAAA	Thrips		
ITBCBOA	Tomato fruitworm		

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Tomato (continued)		
	Pest list continued from previous page.		
ITAMANA	Tomato pinworm		
INASCCA	Vegetable weevil		
IRABAAA	Whiteflies		
ITBCABA	Cutworms	6 lb/A (4-8 lb/gal EC)	Preplant and at planting broadcast soil application. Granular formulations may be applied at planting for symphylan control, otherwise apply preplant. Incorporate into top 6 to 9 inches of soil. For wireworms, incorporate into top 4 to 9 inches of soil.
INBDAAA	White grubs		
IJDAAAA	Symphylans (including garden symphylan	5-6 lb/A (2-25% G) (25% WP) (4-8 lb/gal EC)	
INAVAAA	Wireworms	2-6 lb/A (2-25% G) (4 lb/gal EC) or 2-4 lb/A (25% WP)	
ITBCABA	Cutworms	0.6-0.8 lb/A (2% G)	Postplant broadcast soil application.
INAVAAA	Wireworms		
/28022AA	Turnips		1 ppm (with or without tops, or turnip greens) 7 day preharvest interval through 0.25 pound per acre for foliar application. 10 day preharvest interval from above 0.25 pound through 0.5 pound per acre for foliar and postplant broadcast soil applications. 21 day preharvest interval on fall and winter crops through 0.5 pound per acre for foliar application (if greens are used for food or feed) Preplant broadcast soil application through 5 pounds per acre.
IRACAAA	Aphids (including turnip aphid)	0.2-0.5 lb/A (1-2% D) (2-8 lb/gal EC) or	Foliar application. Apply the higher dosage for cabbage looper and the lower dosage for aphids and thrips.
ITBCCFA	Armyworm		
ITBCCSA	Cabbage looper		
ITBCABA	Cutworms (includ-		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Turnips (continued)		
	Pest list continued from previous page.		
	ing climbing cutworm)	0.15-0.5 lb/A (15-25% WP)	
ITBWAFA	Diamondback moth		
IQALAHA	False chinch bug		
INAMADA	Flea beetles		
IQAQAKA	Harlequin bug		
ITBJAHA	Imported cabbageworm		
IMAAAGA	Leafminers (including serpentine leafminer)		
IMOAAAA	Thrips		
INASCCA	Vegetable weevil		
ITBCABA	Cutworms	0.5 lb/A (2% G)	Postplant broadcast soil application.
INBPAAA	White grubs		
INAVAAA	Wireworms		
IJDAAAA	Symphylans (including garden symphylan)	5 lb/A (2% G) (25% WP)	Preplant broadcast soil application. Incorporate into top 4 to 9 inches of soil immediately after application.
INAVAAA	Wireworms	2.7-5 lb/A (2-25% G) (4-8 lb/gal EC) or 2-4 lb/A (25% WP)	
/23010AA /23010BA	Vetch (including Vetch (Seed Crop))		1 ppm 15 day preharvest or prepasture interval through 0.8 pound per acre foliar application.
ITBJADA	Alfalfa caterpillar	0.25-0.8 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application. The higher dosage may be applied for armyworm, blister beetles, corn earworm, and grasshoppers.
INASBWA	Alfalfa weevil (larvae and adults)		
IRACAAA	Aphids (including greenbug and spotted alfalfa aphid)		
ITBCCFA	Armyworm		
INBPAVA	Asiatic garden beetle		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Vetch (including Vetch (Seed Crop)) (continued)		
	Pest list continued from previous page.		
IQAMAJA	Black grass bug		
INBGAAA	Blister beetles		
INASBXA	Clover leaf weevil		
ITBCBOA	Corn earworm		
IVAHAAA	Crickets		
ITBCABA	Cutworms (including climbing cutworms)		
IVABAAA	Grasshoppers		
INBPALA	Green June beetle		
IRAFAAA	Leafhoppers		
IQAMARA	Lygus bugs		
ITBNAJA	Range caterpillar		
ILAVAAA	Spider mites		
IRAEAAA	Spittlebugs		
IRASADA	Threecornered alfalfa hopper		
IMOAAAA	Thrips		
ITBUAAA	Tortricid moths		
ITBCATA	Velvetbean caterpillar		
ITAAAMA	Webworms		
/03009AA	Walnut		0.1 ppm Do not apply after husks open through 10 pounds per acre for foliar application. Do not feed treated husks to livestock.
IRACAAA	Aphids (including walnut aphid)	0.075-0.15 lb/100 gal or 0.15 lb/A (15% WP) or 0.08-0.5 lb/100 gal or 0.25-3 lb/A (25% WP) or 0.25-3 lb/100 gal (2-8 lb/gal EC) or	Foliar application.
ITAGAAA	Casebearers		
ITBGAZA	Codling moth		
ITABAIA	Fall webworm		
IRABAAA	Scales (including frosted scale, lecanium scales, and oystershell scale)		
ILAVAAA	Spider mites		
IRAEAAA	Spittlebugs		
INALBCA	Twig girdler		
IOBMAMA	Walnut husk fly		

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Walnut (continued)		
		0.25-0.375 lb/200-400 gal/A (2-8 lb/gal EC) or 1-10 lb/A (4-8 lb/gal EC)	
IRAKASA IRAKBYA IRAHAAA	Putnam scale San Jose scale Soft scale insects [including calico scale, frosted scale, and lecanium scales (including European fruit lecanium)]	0.25-0.5 lb/100 gal or 1-3 lb/A (25% WP) (4 lb/gal EC)	Dormant application. Apply January 1 to March 1. Tank mix with petroleum distillate.
IRACBHB	Walnut aphid (eggs)	0.5 lb/250 gal/A or 0.25 lb/500 gal/A (25% WP)	Dormant application. Apply first rate by air carrier equipment or second rate with conventional spray equipment.
		0.5-0.75 lb/200-800 gal/A (25% WP) (4-8 lb/gal EC)	Foliar application. Apply by air-blast spray equipment. Tank mix with petroleum distillate.
		0.25-1.25 lb/100-200 gal/A (4-8 lb/gal EC)	Dormant application. Apply by air-blast spray equipment. Tank mix with petroleum distillate.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/28065AA	Wheat		1 ppm 15 day preharvest interval through 0.8 pound per acre for foliar application.
IRACAAA	Aphids (including corn leaf aphid, english grain aphid, greenbug and yellow clover aphid)	0.25-0.8 lb/A (1-2% D) (15-25% WP) (2-8 lb/gal EC)	Foliar application For greenbug, apply the lower dosage of wettable powder and emulsifiable concentrate formulations in 2 gallons of water per acre by aircraft or low volume ground equipment. Apply the higher dosage for black grass bug, chinch bug, cutworms, false chinch bug, leafhoppers and stink bugs.
ITBCCFA	Armyworm		
IQAMAJA	Black grass bug		
INBGAAA	Blister beetles		
IQALAEA	Chinch bug		
ITBCABA	Cutworms (including climbing cutworms)		
ITBCCOA	Fall armyworm		
IQALAHA	False chinch bug		
IVABAAA	Grasshoppers		
IRAFAAA	Leafhoppers		
IQAMARA	Lygus bugs		
ILAAABA	Mites (including winter grain mite and spider mites such as banks grass mite, brown wheat mite and petrobia mites)		
IQAQAAA	Stink bugs (including say stink bug)		
IMOAAA	Thrips		
ITAAAMA	Webworms		

ORNAMENTALS

(Ornamental Plants (herbaceous, woody shrubs, trees and vines))

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/31003AA	Ornamental Flowering Plants (including Gladiolus)		For use by commercial growers only.
INAVAAA	Wireworms	0.6-0.8 lb/A [bait] (2% G) or 5 lb/A (10% G) (10% P/T)	Soil application at planting. Apply over the bulbs in the furrow at planting time.

PARATHION

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/32000AA /32000DA	Ornamental Plants (including nursery stock)		Apply only to ornamentals growing out of doors by properly equipped personnel on commercial plantings. Do not use in greenhouses, enclosed areas, in home gardens or adjacent to residences or residential areas.
IRACAAA	Aphids	0.2-0.5 lb/A (1-2% D) or 0.15 lb/100 gal [150-250 gal/A] (15% WP) or 0.125-0.5 lb/100 gal or 2-2.5 lb/A (25% WP) or 0.25-0.75 lb/100 gal (2-8 lb/gal EC) or 0.167-0.75 lb/A (4-8 lb/gal EC)	Foliar application. Repeat in 21 days if needed. For spider mites and leafhoppers, repeat in 7 to 10 days.
ITBKABA	Bagworm		
IRARACA	Cottonycushion scale		
ITAMAGA	Juniper webworm		
IQAXAAA	Lace bugs		
ITAAALA	Leaftiers		
IRAFAAA	Leafhoppers		
IRAHAJA	Lecanium scales		
IRAWAAA	Mealybugs		
ILAAABA	Mites		
IRAAABG	Scales (crawlers)		
ILAVAAA	Spider mites		
IMOAAAA	Thrips		
IRABAAA	Whiteflies		
IJDAABA	Garden symphylans	5 lb/A (2% G)	Preplant broadcast soil application. Apply when soil temperatures are above 50 F (10.0 C). Mix granules thoroughly into top 4 to 9 inches of soil. Keep all persons and animals off treated areas for 48 hours. Treated fields should be planted or seeded as soon as possible after the 48 hour reentry interval.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
	Ornamental Plants (including nursery stock) (continued)		
INAVAAA	Wireworms	3-6 lb/A (10% G) or 2-6 lb/A (4 lb/gal EC)	Preplant broadcast soil application. Apply lower rate on mineral soils and higher rate on organic or muck soils. Incorporate into top 6 to 9 inches of soil. Application should be made at least 7 to 14 days before planting. Keep all persons out of treated area for 48 hours.

(Ornamental and Forest Greenhouse Plants)

General Warnings and Limitations: Close all ventilators and openings in the greenhouse prior to treatment. Lock or barricade all entrances or post warning signs at entrances. Temperatures within the greenhouse should be maintained at 70 to 90 F (21.1 to 32.2 C). All foliage and blooms should be free from moisture and the relative humidity should be kept low. Soil should be moist but it is advisable not to water greenhouse the same day of treatment. Do not use on rainy days. Do not use on windy days which may cause vapors to drift. Pick wide open blooms before application. It is advisable to ventilate the greenhouse within 12 hours of application. Ventilation within 8 hours is more desireable, if possible. Do not allow temperatures to drop suddenly when ventilating as undesireable moisture condensation may occur. Day or night applications are possible, provided proper temperature and humidity can be maintained. Allow 8 hours to elapse after application before workers are allowed to reenter greenhouse. Greenhouse should be thoroughly aired before reentry. Never enter smoke or active vapors unless wearing a gas mask passed by the United States Bureau of Mines for parathion protection and protective clothing such as plastic raincoat and rubber gloves. Keep the contents and smoke from feed and food products. Do not use near combustible materials.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/32000CA	Ornamental Plants (greenhouse)		
IRACAAA	Aphids	-- (4.7-9% Impr)	Greenhouse treatment. Distribute the cans in center aisle of greenhouses in the following manner: 1 can within 10 feet of ends of the greenhouse and remaining cans spaced equidistant throughout length of greenhouse. As cans are placed in proper position, top covers should be removed. Using sparkler, ignite can farthest from exit and proceed to next can until all cans are ignited. Get out of the greenhouse immediately. Repeat 1 or 2 applications at approximately 7 day intervals for control for severe infestations. The larger size cans may throw fine particles of carbon into the air under certain conditions. If this becomes objectionable, place the cans on their sides away from greenhouse exit before ignition.
ILAVAAA	Spider mites		
IMOAAAA	Thrips		
	FOREST, CHAPARRAL, NONAGRICULTURAL AND WASTELANDS		
/30005AA	Christmas Tree Plantations		
IRACAAA	Aphids	0.25 lb/100 gal (2-8 lb/gal EC)	Foliar application.
ILAAABA	Mites		

URBAN AND RURAL/INDOOR OUTDOOR AREAS (PUBLIC HEALTH)

General Warnings and Limitations: Do not use this product in tidal marshes and estuaries. Toxic to juvenile shrimp. Do not use in undiluted form. Not for use or storage in or around the home.

	Site and Pest	Dosages and Formulation(s)	Tolerance, Use, Limitations
/680000A	Mosquito Abatement Districts (including irrigation ditches)		
IOAMAAA	Mosquitoes (larvae)	0.04 lb/A (2% G) or 0.1 lb/A (2-5% G) (2-4 lb/gal EC)	Outdoor treatment. May be applied by aircraft in approximately 3 to 10 gallons of water per acre.
	AERIAL, MOTHPROOFING AND TANK MIX APPLICATIONS		
9001500 AAAAAAA	Aerial Application		
	--	Refer to AGRICULTURAL CROPS	All sites except Lettuce (Greenhouse)
		URBAN AND RURAL/INDOOR OUTDOOR AREAS (PUBLIC HEALTH)	Mósquito Abatement Districts (including Irrigation Ditches)
9900300 AAAAAAA	Tank Mix		
	--	Refer to AGRICULTURAL CROPS	Almond, Apple, Apricot, Avocado, Cherry, Fig, Grapes, Nectarine, Olive, Peach, Pear, Plum, Prune, Walnut .

PARATHION

Listing of Registered Pesticide Products by Formulation

94% technical chemical
parathion (057501)
000524-00027

95% technical chemical
parathion (057501)
004787-00003

97% technical chemical
parathion (057501)
000655-00300 009618-00005

98.5% technical chemical
parathion (057501)
000476-02139 000876-00016

99.99% technical chemical
parathion (057501)
003125-00003*
*jacket currently unavailable for review

20% formulation intermediate
parathion (057501)
037686-00062

25% formulation intermediate
parathion (057501)
000476-00231 005905-00341

75% formulation intermediate
parathion (057501)
003743-00175

1% dust
parathion (057501)
000279-00337 000595-00132 000769-00093 000904-00258
001598-00038 002124-00085 003342-00071 003743-00001
004185-00149 005549-00024 005905-00210 008590-00110
009959-00214

2% dust
parathion (057501)
000279-00464 000279-00702 000476-00215 000595-00249
000682-00038 000769-00150 000829-00062 000904-00275
001202-00166 001526-00208 001812-00099 002124-00551
002393-00214 003051-00030 003743-00278 004185-00152
006735-00029 008590-00049 009779-00202 009859-00131
034704-00142 037686-00044 042057-00018 042463-00039

Listing of Registered Pesticide Products by Formulation (continued)

3% dust

parathion (057501)
000682-00039

2% granular

parathion (057501)
000279-01957 000524-000139 005481-00099 035222-00003
042057-00054

4% granular

parathion (057501)
000524-00140 003743-00175 004185-00120 005797-00094
005905-00351 009859-00213 042463-00006

5% granular

parathion (057501)
000524-00290 005481-00127

10% granular

parathion (057501)
000279-02069 000279-02204 000476-01641 000524-00141
000769-00442 000904-00289 001439-00164 001812-00124
001842-00278 002124-00424 002217-00377 002269-00169
005905-00295 009779-00205 009859-00153 014775-00012
019713-00100 037686-00033 044317-00038 045115-00041

parathion (057501) plus aromatic petroleum derivative solvent (006501)
001990-00446

20% granular

parathion (057501)
000524-00266 014775-00036

25% granular

parathion (057501)
000524-00138

15% wettable powder

parathion (057501)
000279-00336 000476-00230 000769-00077 000904-00270
001439-00129 001812-00105 001842-00010 002124-00146
003743-00253 005905-00292 009859-00127 033955-00302
034704-00178 040831-00061 044317-00032

Listing of Registered Pesticide Products by Formulation (continued)

25% wettable powder

parathion (057501)

000279-00447 000400-00215 000476-00206 000682-00052
000802-00412 000904-00269 001202-00252 002935-00038
004581-00003 005481-00185 005905-00255 007001-00055
010163-00062 011656-00062 034704-00056 034704-00090
042057-00003 040831-00017

4.7% impregnated materials

parathion (057501)

001327-00013

9% impregnated materials

parathion (057501)

001327-00011

2 lb/gal emulsifiable concentrate

parathion (057501) plus aromatic petroleum derivative solvent (006501)

000524-00091 042057-00010

parathion (057501) plus aromatic petroleum distillate (006601)

001345-00008

parathion (057501) plus xylene (086802)

000551-00152 000904-00287 001842-00053 002217-00472
040831-00007 005905-00109

4 lb/gal emulsifiable concentrate

parathion (057501)

001202-00251 001439-00143 002269-00100 002935-00138
004581-00179 005905-00334 006973-00013 008773-00005
008934-00059 009859-00137 042057-00095

parathion (057501) plus aromatic petroleum derivative solvent (006501)

000769-00291 000802-00166 003743-00266 009779-00026
009859-00112 010163-00001 011656-00015 042463-00003

parathion (057501) plus petroleum distillate (063503)

000279-00909

parathion (057501) plus xylene (086802)

000400-00202 001208-00035 001812-00136 001842-00105
001990-00438 002124-00743 002393-00242 002737-00009
005549-00027 005797-00048 005905-00082 007001-00005
009859-00260 011682-00027 014775-00013 033722-00004
034704-00089 040831-00002

Listing of Registered Pesticide Products by Formulation (continued)

4 lb/gal emulsifiable concentrate (continued)

parathion (057501) plus xylene range aromatic solvent (086803)
000279-01368 000279-01906 000476-00603 000524-00132
000682-00020 000876-00078 001258-01040 001526-00496
002217-00361 002393-00356 004185-00320 006735-00100
007401-00156 007467-00057 034704-00002 037686-00028
044317-00033

4.2 lb/gal emulsifiable concentrate

parathion (057501) plus aromatic petroleum derivative solvent (006501)
000524-00130

6 lb/gal emulsifiable concentrate

parathion (057501)
000279-01019 000279-01251

parathion (057501) plus heavy aromatic naphtha (006602)
000876-00074

8 lb/gal emulsifiable concentrate

parathion (057501)
000072-00314 000239-01268 000279-01611 000279-02230
000400-00210 000400-00347 000476-01430 000476-01441
000551-00170 000829-00166 001202-00265 002124-00606
002935-00329 003743-00197 005481-00151 005905-00408
007001-00052 009859-00140 010163-00054 010226-00006
011656-00014 014775-00030 034704-00085 034704-00088
034704-00175 044215-00016 044317-00019

parathion (057501) plus aromatic petroleum derivative solvent (006501)
000524-00340 009768-00023 009779-00136 010163-00052
019713-00038 042057-00037

parathion (057501) plus petroleum distillate (063503)
000595-00302

parathion (057501) plus xylene (086802)
000264-00359 000904-00260 002393-00272 002737-00028
004185-00401 005905-00086 005905-00187 008590-00201
012130-00027 040831-00043

parathion (057501) plus xylene range aromatic solvent (086803)
000682-00042 000876-00079 001339-00127 002217-00476
003468-00037 006735-00113 007401-00297 008590-00204
034704-00009

PARATHION

Listing of Registered Pesticide Products by Formulation (continued)

40% emulsifiable concentrate
parathion (057501)
000682-00040

parathion (057501) plus xylene range aromatic solvent (086803)
000682-00041

83.58% emulsifiable concentrate
parathion (057501) plus xylene range aromatic solvent (086803)
001990-00404

4 lb/gal flowable concentrate
parathion (057501)
000476-00946 042057-00036

9999999 State Label Registrations

AL Reg. No.
010873-07145 015575-05332

AZ Reg. No.
000239-04180 007001-04372 010026-05669 011656-05753
037832-08353

CA Reg. No.
000239-04137 000238-04138 000239-04139 000239-04140
000279-03884 000279-03894 000279-03904 000279-03987
000279-04030 000279-04031 002935-06666 005905-07948
005967-05145 005967-05159 005967-05160 005967-05170
006973-03569 006973-03570 006973-04412 007001-07694
007001-07699 007001-07721 008434-04723 010951-09802
010965-10051 010969-08837 010972-05294 010972-05303
010972-06551 010969-06553 010993-05282 011079-04793
011224-09003 011369-07387 011369-08786 011369-08799
011369-08811 011556-05684 011656-05691 011656-05692
011656-05864 035296-05786 035296-05805 035296-05809
035296-05823

CO Reg. No.
000960-03830 008773-08972

FL Reg. No.
003122-07193 003122-07194 003122-07201 003122-07570
005905-03082 005905-07860 009169-05290 009169-05296
009782-03642 009782-03643 009782-03644 009782-03645
009782-10404 009859-05640 009859-06208 009859-06280
009859-09148 014775-08739 014775-08741 014775-10502
032928-05927 032928-05928 033352-07627 033352-07634
034306-05497 035222-07151 035222-07158

PARATHION

Listing of Registered Pesticide Products by Formulation (continued)

GA Reg. No.
010873-03323 010873-07356 010863-07418

HI Reg. No.
000239-04181

ID Reg. No.
008917-05584

MD Reg. No.
005905-07591

NJ Reg. No.
005905-07590 014782-10332 014782-10333 014782-10335

OR Reg. No.
001871-08938

PA Reg. No.
005905-07581

TX Reg. No.
001208-03211 007467-03392 031143-04469 033722-03274
037854-08299 037854-08306 037854-08307

VA Reg. No.
005905-07572

WA Reg. No.
002935-06630

PARATHION

Appendix B

Listing of Registration Numbers By Site

AGRICULTURAL CROPS

/23001AA Alfalfa

000072-00314 000264-00359 000279-00909 000279-01251
000279-01611 000400-00202 000400-00210 000400-00347
000476-00206 000476-00215 000476-00230 000476-00603
000476-00946 000476-01430 000476-01441 000524-00091
000524-00130 000524-00132 000524-00340 000551-00152
000551-00170 000682-00020 000682-00038 000682-00040
000682-00041 000682-00042 000682-00052 000682-00062
000769-00093 000769-00150 000769-00291 000802-00166
000802-00412 000876-00074 000876-00078 000876-00079
000904-00260 000904-00287 001202-00251 001208-00035
001258-01040 001339-00127 001526-00208 001526-00496
001842-00105 002124-00085 002124-00551 002124-00606
002124-00743 002217-00361 002217-00467 002393-00214
002393-00242 002393-00272 002393-00356 002935-00038
002935-00138 002935-00329 003468-00037 003743-00001
003743-00197 003743-00278 004185-00120 004185-00149
004185-00152 004185-00320 004185-00401 005481-00151
005481-00185 005905-00082 005905-00086 005905-00210
005905-00334 005905-00408 006735-00029 006735-00100
006735-00113 006937-00013 007001-00005 007001-00052
007401-00156 007401-00297 008590-00201 008590-00204
008773-00005 009768-00023 009779-00026 009779-00136
009779-00202 009859-00112 010163-00001 010163-00052
010163-00054 010163-00062 010226-00006 011656-00014
011656-00015 011656-00062 011682-00027 012130-00027
014775-00013 014775-00030 019713-00038 033722-00004
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089 034704-00175 040831-00002 040831-00007
040831-00043 042057-00003 042057-00010 042057-00018
042057-00036 042057-00037 042057-00095 044215-00016
044317-00019 044317-00033

/23001BA Alfalfa (Seed Crop)

000476-00946 000476-01441 000802-00166 000802-00412
001202-00251 001526-00496 002393-00356 007001-00005
007001-00052 010163-00052 010163-00054 010226-00006

/03001AA Almond

000239-01268 000279-00447 000279-01611 000400-00210
000400-00215 000476-00206 000476-00603 000524-00091
000524-00130 000524-00132 000524-00340 001202-00166
001202-00251 001202-00252 001202-00265 001526-00496
002935-00038 002935-00138 002935-00329 005481-00151
005481-00185 005905-00082 005905-00086 005905-00255
005905-00408 007001-00005 007001-00052 007001-00055
007401-00156 007401-00297 011656-00014 011656-00015

EPA Index to Pesticide Chemicals

PARATHION

Appendix B

Listing of Registration Numbers By Site (continued)

Almond (continued)

011656-00062 011682-00027 014775-00013 014775-00030
034704-00002 034704-00009 034704-00056 034704-00085
034704-00089 034704-00090

/04001AA Apple

000072-00314 000239-01268 000264-00359 000279-00336
000279-00337 000279-00447 000279-00702 000279-00909
000279-01251 000279-01368 000279-01611 000279-02230
000400-00202 000400-00210 000400-00215 000400-00347
000476-00206 000476-00230 000476-00603 000476-00946
000476-01430 000476-01441 000524-00091 000524-00130
000524-00132 000524-00340 000551-00170 000682-00039
000682-00040 000682-00041 000682-00052 000682-00062
000769-00077 000769-00291 000802-00166 000802-00412
000829-00062 000829-00166 000876-00074 000876-00078
000876-00079 000904-00260 000904-00269 000904-00270
001202-00166 001202-00251 001202-00252 001202-00265
001345-00008 001439-00129 001439-00143 001526-00496
002124-00146 002124-00606 002393-00242 002393-00272
002393-00356 002935-00038 002935-00138 002935-00329
004185-00149 004185-00152 004581-00003 004581-00179
005481-00151 005481-00185 005905-00082 005905-00086
005905-00187 005905-00255 005905-00292 005905-00408
007001-00005 007001-00052 007001-00055 007401-00156
007401-00297 008590-00201 008590-00204 008773-00005
008934-00059 009859-00112 010163-00052 010163-00054
010163-00062 011656-00014 011656-00015 011656-00062
011682-00027 012130-00027 014775-00013 014775-00030
019713-00038 033955-00302 034704-00002 034704-00009
034704-00056 034704-00085 034704-00088 034704-00089
034704-00090 034704-00175 034704-00178 040831-00002
040831-00017 040831-00061 042057-00003 042057-00010
042057-00036 042057-00037 042057-00095 044215-00016
044317-00032

/05001AA Apricot

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000476-00206 000476-00230 000476-00603 000476-00946
000476-01441 000524-00091 000524-00130 000524-00132
000524-00340 000682-00040 000682-00041 000682-00052
000802-00166 000802-00412 000876-00074 000876-00078
000876-00079 001202-00166 001202-00251 001202-00252
001202-00265 001526-00496 002393-00356 002935-00038
002935-00138 002935-00329 005481-00151 005481-00185
005905-00082 005905-00086 005905-00255 005905-00408
007001-00052 007001-00055 007401-00156 007401-00297
010163-00052 010163-00054 010163-00062 011656-00014

Listing of Registration Numbers By Site (continued)

Apricot (continued)

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014775-00030 034704-00002 034704-00009 034704-00056
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/13018AA Artichoke

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000279-01251 000400-00202 000400-00215 000476-00206
000476-00603 000476-00946 000476-01441 000524-00091
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000682-00041 000682-00062 000802-00166 000802-00412
001202-00251 001202-00252 001202-00265 001526-00496
002393-00356 002935-00329 005481-00151 005905-00082
005905-00086 005905-00187 005905-00255 005905-00408
006735-00100 006735-00113 006937-00013 007001-00005
007001-00052 007001-00055 007401-00156 007401-00297
010163-00052 010163-00054 011656-00014 011656-00015
011682-00027 014775-00013 014775-00030 034704-00002
034704-00009 034704-00056 034704-00085 034704-00088
034704-00089 042057-00036 042057-00095

/28000AA Avocado

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000524-00340 001526-00496 002935-00038 005905-00082
005905-00255 006735-00100 007401-00156 007401-00297
011682-00027 014775-00013 014775-00030 034704-00002
034704-00009 034704-00085

/28063AA Barley

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000279-0T251 000279-01611 000400-00202 000400-00210
000400-00347 000476-00206 000476-00215 000476-00230
000476-00603 000476-01430 000476-01441 000524-00091
000524-00130 000524-00132 000524-00340 000551-00152
000551-00170 000682-00020 000682-00038 000682-00040
000682-00041 000682-00042 000682-00052 000682-00062
000769-00093 000769-00150 000769-00291 000802-00166
000802-00412 000876-00074 000876-00078 000876-00079
000904-00287 001202-00251 001208-00035 001258-01040
001339-00127 001526-00496 001842-00053 001842-00105
001990-00404 001990-00438 002124-00606 002217-00361
002217-00467 002217-00472 002393-00214 002393-00242
002393-00272 002393-00356 002737-00009 002737-00028
002935-00038 002935-00138 002935-00329 003468-00037
003743-00001 003743-00197 003743-00278 004185-00149
004185-00152 004185-00320 004185-00401 005481-00151
005481-00185 005905-00082 005905-00086 005905-00210

EPA Index to Pesticide Chemicals

PARATHION

Appendix B

Listing of Registration Numbers By Site (continued)

Barley (continued)

005905-00255 005905-00334 005905-00408 006735-00029
007001-00005 007001-00052 007001-00055 007401-00156
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009768-00023 009779-00026 009779-00136 009859-00112
010163-00001 010163-00052 010163-00054 010163-00062
010226-00006 011656-00014 011656-00015 011656-00062
011682-00027 012130-00027 014775-00013 014775-00030
019713-00038 033722-00004 034704-00002 034704-00009
034704-00056 034704-00085 034704-00088 034704-00089
034704-00175 040831-00002 040831-00007 040831-00043
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042057-00037 042057-00095 044215-00016 044317-00019
044317-00033

/28063AA **Beans**

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000279-00464 000279-00702 000279-00909 000279-01019
000279-01251 000279-01368 000279-01611 000279-02069
000279-02204 000279-02230 000400-00202 000400-00210
000400-00215 000400-00347 000476-00206 000476-00215
000476-00230 000476-00603 000476-00946 000476-01430
000476-01441 000476-01641 000524-00091 000524-00130
000524-00132 000524-00138 000524-00139 000524-00140
000524-00141 000524-00266 000524-00290 000524-00340
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000595-00302 000682-00038 000682-00039 000682-00062
000769-00077 000769-00093 000769-00150 000769-00291
000769-00442 000802-00166 000802-00412 000829-00062
000829-00166 000876-00074 000876-00078 000876-00079
000904-00258 000904-00260 000904-00275 000904-00287
001202-00166 001202-00251 001202-00252 001202-00265
001258-01040 001339-00127 001345-00008 001439-00129
001439-00143 001439-00164 001526-00496 001812-00099
001812-00136 001842-00010 002124-00085 002124-00146
002124-00424 002124-00551 002124-00606 002124-00743
002217-00361 002217-00467 002217-00472 002269-00100
002269-00169 002393-00214 002393-00242 002393-00272
002393-00356 002935-00038 002935-00138 002935-00329
003468-00037 003743-00001 003743-00197 003743-00266
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005905-00082 005905-00086 005905-00187 005905-00210
005905-00255 005905-00292 005905-00295 005905-00334
005905-00408 006735-00029 006735-00100 006735-00113
006937-00013 007001-00005 007001-00052 007001-00055
007401-00156 007401-00297 007467-00057 008590-00049
008590-00110 008590-00201 008590-00204 008773-00005

Listing of Registration Numbers By Site (continued)

Beans (continued)

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014775-00036 019713-00038 019713-00100 033722-00004
034704-00002 034704-00009 034704-00056 034704-00085
034704-00088 034704-00089 034704-00090 034704-00142
034704-00178 035222-00003 037686-00028 037686-00044
040831-00002 040831-00007 040831-00017 042057-00003
042057-00010 042057-00018 042057-00036 042057-00037
042057-00054 042057-00095 042463-00003 042463-00039
044215-00016 044317-00019 044317-00032 045115-00041

/28002AA Beets

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000476-00206 000476-00230 000476-00946 000476-01430
000476-01441 000476-01641 000524-00091 000524-00130
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000524-00141 000524-00266 000524-00290 000524-00340
000595-00302 000682-00020 000682-00038 000682-00040
000682-00041 000682-00042 000682-00052 000682-00062
000802-00166 000802-00412 000876-00074 000876-00078
000876-00079 001202-00252 001345-00008 001439-00143
001439-00164 001526-00496 002124-00606 002217-00361
002217-00467 002393-00242 002393-00272 002393-00356
002935-00038 002935-00329 003468-00037 003743-00197
004185-00320 004185-00401 005481-00151 005481-00185
005905-00082 005905-00086 005905-00187 005905-00210
005905-00255 005905-00408 006735-00100 006735-00113
007001-00005 007001-00052 007001-00055 007401-00156
007401-00297 007467-00057 008590-00201 008590-00204
008773-00005 009779-00205 010163-00001 010163-00052
010163-00054 010163-00062 011656-00014 011656-00015
011656-00062 011682-00027 014775-00012 014775-00013
014775-00030 014775-00036 033722-00004 034704-00002
034704-00009 034704-00085 034704-00088 034704-00089
034704-00142 035222-00003 040831-00002 042057-00010
042057-00018 042057-00036 042057-00037 042057-00054
042057-00095

/01002AA Blackberry

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000524-00132 000524-00340 000769-00093 000769-00150

Listing of Registration Numbers By Site (continued)

Blackberry (continued)

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007401-00156 007401-00297 011682-00027 014775-00013
014775-00030 034704-00002 034704-00009 034704-00085
034704-00088 034704-00089 040831-00002

/15008AA Blackeyed Beans

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/01009AA Blueberry

000279-00337 000279-00702 000279-01251 000279-01611
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000476-00946 000476-01430 000524-00091 000524-00130
000524-00132 000524-00340 000769-00077 000769-00093
000769-00150 000876-00074 000876-00078 000876-00079
000904-00258 000904-00260 000904-00275 001202-00251
001202-00265 001345-00008 001526-00496 002124-00606
002393-00242 002393-00272 002935-00038 003743-00253
004185-00149 004185-00152 005905-00082 005905-00086
005905-00187 007001-00055 007401-00156 007401-00297
008590-00201 008590-00204 011682-00027 012130-00027
014775-00013 014775-00030 019713-00038 034704-00002
034704-00009 034704-00085 040831-00002 042463-00003

/01003AA Boysenberry

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000876-00079 001202-00166 001202-00251 001202-00252
001202-00265 001526-00496 002935-00038 002935-00138
005905-00082 005905-00086 005905-00187 005905-00255
007401-00156 007401-00297 011656-00062 011682-00027
014775-00013 014775-00030 034704-00088 034704-00089
040831-00002

/13005AA Broccoli

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000279-00337 000279-00447 000279-00464 000279-00702
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000279-01957 000279-02069 000400-00202 000400-00210
000400-00215 000400-00347 000476-00206 000476-00215
000476-00230 000476-00603 000476-00946 000476-01430
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Listing of Registration Numbers By Site (continued)

Broccoli (continued)

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000876-00079 000904-00258 000904-00260 000904-00275
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001439-00129 001439-00143 001526-00208 001526-00496
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002124-00606 002124-00743 002217-00361 002269-00100
002393-00242 002393-00272 002393-00356 002737-00009
002737-00028 002935-00038 002935-00138 002935-00329
003468-00037 003743-00001 003743-00197 003743-00266
003743-00278 004185-00320 004185-00401 005481-00151
005481-00185 005905-00082 005905-00086 005905-00187
005905-00210 005905-00255 005905-00292 005905-00334
005905-00351 005905-00408 006735-00029 006735-00100
006735-00113 006937-00013 007001-00005 007001-00052
007001-00055 007401-00156 007401-00297 007467-00057
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008773-00005 008934-00059 009779-00026 009779-00136
009779-00202 009779-00205 009859-00112 009859-00127
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011656-00015 011656-00062 011682-00027 012130-00027
014775-00012 014775-00013 014775-00030 014775-00036
019713-00038 033722-00004 034704-00002 034704-00009
034704-00056 034704-00085 034704-00088 034704-00089
034704-00142 034704-00175 034704-00178 035222-00003
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042057-00003 042057-00010 042057-00036 042057-00037
042057-00054 042057-00095 042463-00003 044317-00019
044317-00032 044317-00033

/13006AA Brussels Sprouts

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000279-01957 000279-02069 000400-00202 000400-00210
000400-00215 000400-00347 000476-00206 000476-00215
000476-00230 000476-00603 000476-00946 000476-01430
000476-01441 000524-00091 000524-00130 000524-00132
000524-00138 000524-00139 000524-00140 000524-00141
000524-00266 000524-00290 000524-00340 000595-00302
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Listing of Registration Numbers By Site (continued)

Brussels Sprouts (continued)

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001202-00252 001339-00127 001439-00129 001439-00143
001526-00208 001526-00496 001842-00010 002124-00085
002124-00551 002124-00606 002124-00743 002217-00361
002393-00242 002393-00272 002393-00356 002737-00009
002737-00028 002935-00038 002935-00138 002935-00329
003743-00001 003743-00197 003743-00266 003743-00278
004185-00149 004185-00152 004185-00320 004185-00401
005481-00151 005481-00185 005905-00082 005905-00086
005905-00187 005905-00210 005905-00255 005905-00292
005905-00334 005905-00408 006735-00100 006735-00113
006937-00013 007001-00005 007001-00052 007001-00055
007401-00156 007401-00297 007467-00057 008590-00049
008590-00110 008590-00201 008590-00204 008773-00005
009779-00026 009779-00136 009779-00202 009779-00205
009859-00112 009859-00127 010163-00052 010163-00054
010226-00006 011656-00014 011656-00015 011656-00062
011682-00027 012130-00027 014775-00012 014775-00013
014775-00030 014775-00036 019713-00038 033722-00004
034704-00002 034704-00009 034704-00056 034704-00085
034704-00088 034704-00089 034704-00142 034704-00175
034704-00178 035222-00003 037686-00028 040831-00002
040831-00017 040831-00061 042057-00003 042057-00036
042057-00054 042057-00095 042463-00003 044317-00019
044317-00032 044317-00033

/13007AA Cabbage

000072-00314 000239-01268 000264-00359 000279-00336
000279-00337 000279-00447 000279-00464 000279-00702
000279-01019 000279-01251 000279-01368 000279-01611
000279-01957 000279-02069 000279-02204 000400-00202
000400-00210 000400-00215 000400-00347 000476-00206
000476-00215 000476-00230 000476-00603 000476-00946
000476-01430 000476-01441 000524-00091 000524-00130
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000682-00042 000682-00052 000682-00062 000769-00077
000769-00093 000769-00150 000769-00291 000802-00166
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000876-00078 000876-00079 000904-00258 000904-00260
000904-00275 001202-00166 001202-00251 001202-00252
001339-00127 001439-00129 001439-00143 001526-00208
001526-00496 001598-00038 001812-00136 001842-00010

Listing of Registration Numbers By Site (continued)

Cabbage (continued)

002124-00085 002124-00146 002124-00551 002124-00606
002217-00361 002269-00100 002393-00214 002393-00242
002393-00272 002393-00356 002737-00009 002737-00028
002935-00038 002935-00138 002935-00329 003468-00037
003743-00001 003743-00197 003743-00266 003743-00278
004185-00149 004185-00152 004185-00320 004185-00401
005481-00151 005481-00185 005549-00024 005905-00082
005905-00086 005905-00187 005905-00210 005905-00255
005905-00292 005905-00295 005905-00334 005905-00408
006735-00029 006735-00100 006735-00113 006937-00013
007001-00005 007001-00052 007001-00055 007401-00156
007401-00297 007467-00057 008590-00049 008590-00110
008590-00201 008590-00204 008773-00005 008934-00059
009779-00026 009779-00136 009779-00202 009779-00205
009859-00112 009859-00127 009859-00131 009859-00137
009859-00140 009859-00214 009859-00260 010163-00001
010163-00052 010163-00054 010163-00062 010226-00006
011656-00014 011656-00015 011656-00062 011682-00027
012130-00027 014775-00012 014775-00013 014775-00030
014775-00036 019713-00038 033722-00004 034704-00002
034704-00009 034704-00056 034704-00085 034704-00088
034704-00089 034704-00142 034704-00175 034704-00178
035222-00003 037686-00028 037686-00044 040831-00002
040831-00017 040831-00061 042057-00003 042057-00010
042057-00018 042057-00036 042057-00037 042057-00054
042057-00095 042463-00003 042463-00039 044317-00019
044317-00032 044317-00033

/13007BA Cabbage (Seed Crop)

000524-00091 000524-00130 000524-00132 000524-00340
007401-00156 007401-00297 011682-00027 014775-00013
014775-00030 034704-00002 034704-00009 034704-00085

/14003AA Carrots

000239-01268 000279-00336 000279-00337 000279-00447
000279-00464 000279-00702 000279-01251 000279-01368
000279-01611 000279-01957 000279-02069 000279-02204
000400-00202 000400-00210 000400-00215 000476-00206
000476-00215 000476-00230 000476-00603 000476-00946
000476-01441 000476-01641 000524-00091 000524-00130
000524-00132 000524-00138 000524-00139 000524-00140
000524-00141 000524-00266 000524-00290 000524-00340
000551-00170 000595-00249 000682-00020 000682-00039
000682-00052 000769-00093 000769-00150 000802-00166
000802-00412 000904-00269 000904-00270 001202-00166

Listing of Registration Numbers By Site (continued)

Carrots (continued)

001202-00251 001202-00252 001202-00265 001439-00143
001439-00164 001526-00208 001526-00496 002393-00214
002393-00356 002935-00038 002935-00329 004185-00401
005481-00151 005481-00185 005905-00082 005905-00187
005905-00210 005905-00255 005905-00408 006735-00100
006735-00113 006937-00013 007001-00005 007001-00052
007001-00055 007401-00156 007401-00297 007467-00057
008773-00005 009779-00205 009859-00137 009859-00140
009859-00260 010163-00001 010163-00052 010163-00054
010163-00062 011656-00014 011656-00015 011656-00062
011682-00027 014775-00012 014775-00013 014775-00030
014775-00036 019713-00038 034704-00002 034704-00009
034704-00056 034704-00085 034704-00088 034704-00089
034704-00142 035222-00003 040831-00017 042057-00003
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042057-00054 042057-00095

/13008AA **Cauliflower**

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000279-00464 000279-01019 000279-01368 000279-01611
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000400-00210 000400-00215 000400-00347 000476-00206
000476-00215 000476-00603 000476-00946 000476-01430
000476-01441 000524-00091 000524-00130 000524-00132
000524-00138 000524-00139 000524-00140 000524-00141
000524-00266 000524-00290 000524-00340 000595-00132
000595-00249 000595-00302 000682-00062 000769-00093
000769-00150 000769-00291 000802-00166 000802-00412
000829-00062 000829-00166 000876-00074 000876-00078
000876-00079 000904-00258 000904-00260 000904-00269
000904-00275 001202-00251 001202-00252 001339-00127
001526-00208 001526-00496 001598-00038 001842-00010
002124-00146 002124-00606 002124-00743 002217-00361
002269-00100 002393-00242 002393-00272 002393-00356
002737-00009 002737-00028 002935-00038 002935-00138
002935-00329 003468-00037 003743-00001 003743-00197
003743-00266 003743-00278 004185-00149 004185-00152
004185-00320 004185-00401 005481-00151 005481-00185
005905-00082 005905-00086 005905-00187 005905-00255
005905-00295 005905-00334 005905-00408 006735-00100
007001-00005 007001-00052 007001-00055 007401-00156
007401-00297 007467-00057 008590-00049 008590-00110
008590-00201 008590-00204 008773-00005 008934-00059
009779-00026 009779-00136 009779-00202 009779-00205
009859-00112 009859-00131 009859-00214 010163-00052
010163-00054 010226-00006 011656-00014 011656-00015

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Listing of Registration Numbers By Site (continued)

Cauliflower (continued)

011682-00027 012130-00027 014775-00012 014775-00013
014775-00030 014775-00036 019713-00038 033722-00004
034704-00002 034704-00009 034704-00056 034704-00085
034704-00088 034704-00089 034704-00142 034704-00175
034704-00178 035222-00003 040831-00002 040831-00061
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/28003AA

Celery

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000400-00210 000400-00215 000476-00206 000476-00215
000476-00230 000476-00603 000476-00946 000476-01441
000524-00091 000524-00130 000524-00132 000524-00138
000524-00139 000524-00140 000524-00141 000524-00266
000524-00290 000524-00340 000551-00152 000595-00249
000682-00020 000682-00040 000682-00041 000682-00042
000769-00093 000769-00150 000802-00166 000802-00412
000904-00260 000904-00287 001202-00251 001202-00252
001202-00265 001258-01040 001439-00143 001439-00164
001526-00496 001842-00010 002124-00146 002269-00100
002393-00356 002935-00038 002935-00138 002935-00329
004185-00149 004185-00152 005481-00151 005481-00185
005905-00082 005905-00187 005905-00210 005905-00255
005905-00292 005905-00295 005905-00408 006735-00100
006735-00113 006937-00013 007001-00005 007001-00052
007001-00055 007401-00156 007401-00297 008773-00005
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009859-00137 009859-00140 009859-00260 010163-00052
010163-00054 011656-00014 011656-00015 011656-00062
011682-00027 014775-00012 014775-00013 014775-00030
014775-00036 019713-00038 034704-00002 034704-00009
034704-00056 034704-00085 034704-00088 034704-00089
034704-00090 034704-00142 035222-00003 040831-00017
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042057-00037 042057-00054 042057-00095 044317-00033

/03002AA

Cherry

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000279-01251 000279-01368 000279-01611 000279-02230
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000476-00206 000476-00230 000476-00603 000476-00946
000476-01430 000476-01441 000524-00091 000524-00130
000524-00132 000524-00340 000682-00040 000682-00041
000682-00052 000802-00166 000802-00412 000876-00074
000876-00078 000876-00079 001202-00166 001202-00251
001202-00252 001202-00265 001526-00496 002124-00606

Listing of Registration Numbers By Site (continued)

Cherry (continued)

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002935-00329 004581-00003 004581-00179 005481-00151
005905-00082 005905-00086 005905-00187 005905-00408
007001-00055 007401-00156 007401-00297 008590-00201
008590-00204 008934-00059 010163-00052 010163-00054
010163-00062 011656-00014 011656-00015 011656-00062
011682-00027 014775-00013 014775-00030 034704-00002
034704-00009 034704-00056 034704-00085 034704-00088
034704-00089 034704-00090 034704-00175 034704-00178
040831-00002 040831-00017 042057-00003 042057-00010
042057-00037

/02000AA Citrus Fruits

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000279-01019 000279-01251 000279-01611 000400-00202
000400-00210 000400-00215 000476-00206 000476-00230
000476-00603 000476-00946 000476-01441 000524-00091
000524-00130 000524-00132 000524-00340 000802-00166
000802-00412 000876-00074 000876-00078 000876-00079
001202-00166 001202-00251 001202-00252 001202-00265
001439-00143 001526-00496 001812-00105 001842-00010
001842-00105 002124-00146 002124-00606 002124-00743
002393-00356 002935-00038 002935-00138 002935-00329
005481-00151 005905-00082 005905-00086 005905-00187
005905-00255 005905-00292 005905-00408 006735-00100
007001-00005 007001-00052 007001-00055 007401-00156
007401-00297 009859-00112 009859-00127 009859-00137
009859-00140 009859-00260 010163-00052 010163-00054
010163-00062 011656-00014 011656-00062 011682-00027
014775-00013 014775-00030 019713-00038 033955-00302
034704-00056 034704-00090 040831-00017 040831-00061

/23003AA /23003BA Clover (including Clover (Seed Crop))

000072-00314 000264-00359 000279-01251 000279-01611
000400-00202 000400-00210 000400-00347 000476-00206
000476-00215 000476-00230 000476-00603 000476-00946
000476-01430 000476-01441 000524-00091 000524-00130
000524-00132 000524-00340 000682-00020 000682-00038
000682-00040 000682-00041 000682-00042 000682-00052
000682-00062 000769-00093 000769-00150 000769-00291
000802-00166 000802-00412 000876-00074 000876-00078
000876-00079 001202-00251 001339-00127 001526-00496
002124-00606 002217-00361 002217-00467 002393-00214
002393-00242 002393-00272 002393-00356 002935-00329
003468-00037 003743-00001 003743-00197 003743-00278
004185-00120 004185-00149 004185-00152 004185-00320

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Listing of Registration Numbers By Site (continued)

Clover (including Clover (Seed Crop)) (continued)

004185-00401 005481-00151 005481-00185 005905-00082
005905-00086 005905-00210 005905-00334 005905-00408
006735-00029 006735-00100 006735-00113 007001-00005
007001-00052 007401-00156 007401-00297 008590-00201
008590-00204 008773-00005 009768-00023 009779-00026
009779-00136 009779-00202 009859-00112 010163-00001
010163-00052 010163-00054 010163-00062 011656-00014
011656-00015 011656-00062 011682-00027 014775-00013
014775-00030 019713-00038 033722-00004 034704-00002
034704-00009 034704-00085 034704-00175 040831-00002
042057-00010 042057-00018 042057-00036 042057-00037
042057-00095 044215-00016 044317-00019 044317-00033

/13009AA **Collards**

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000279-01368 000279-01611 000400-00202 000400-00210
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000769-00077 000769-00093 000769-00150 000829-00062
000829-00166 000876-00074 000876-00078 000876-00079
000904-00258 000904-00275 001526-00496 001598-00038
004185-00152 005905-00082 005905-00086 005905-00187
006735-00100 006735-00113 007001-00055 007401-00156
007401-00297 007467-00057 008773-00005 009779-00026
009779-00136 009779-00202 009779-00205 009859-00131
009859-00214 011682-00027 014775-00013 014775-00030
034704-00002 034704-00009 034704-00056 034704-00085
034704-00088 034704-00089 034704-00142 035222-00003
037686-00044 040831-00002 042463-00003 044317-00032

/28005AA **Corn**

000072-00314 000239-01268 000264-00359 000279-00337
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000279-01611 000279-01957 000279-02069 000279-02204
000400-00202 000400-00210 000400-00215 000400-00347
000476-00206 000476-00230 000476-00603 000476-00946
000476-01430 000476-01441 000524-00091 000524-00130
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000524-00141 000524-00266 000524-00290 000524-00340
000551-00152 000551-00170 000595-00302 000682-00020
000682-00042 000682-00062 000769-00093 000769-00150
000769-00291 000769-00442 000802-00412 000876-00074
000876-00078 000876-00079 000904-00258 000904-00260
000904-00275 000904-00287 001202-00252 001202-00265
001258-01040 001439-00129 001439-00143 001439-00164
001526-00496 001842-00053 001842-00105 001990-00466
002124-00146 002124-00424 002124-00606 002124-00743

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Listing of Registration Numbers By Site (continued)

Corn (continued)

002217-00361 002217-00377 002217-00467 002217-00472
002269-00169 002393-00214 002393-00242 002393-00272
002393-00356 002737-00009 002737-00028 002935-00038
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005481-00185 005549-00027 005905-00082 005905-00086
005905-00187 005905-00210 005905-00255 005905-00292
005905-00295 005905-00408 006735-00100 006735-00113
006937-00013 007001-00005 007001-00052 007001-00055
007401-00156 007401-00297 007467-00057 008590-00201
008590-00204 008773-00005 009779-00026 009779-00136
009779-00205 009859-00112 009859-00213 010163-00052
010163-00054 011656-00014 011656-00015 011656-00062
011682-00027 012130-00027 014775-00012 014775-00013
014775-00030 014775-00036 019713-00038 019713-00100
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089 034704-00142 034704-00175 035222-00003
037686-00028 040831-00002 040831-00007 042057-00003
042057-00010 042057-00018 042057-00036 042057-00037
042057-00054 042463-00003 042463-00006 044215-00016
044317-00033 045115-00041

/28007AA Cotton

000279-01368 000279-01611 000400-00202 000400-00210
000400-00215 000476-00215 000476-00603 000476-00946
000476-01441 000524-00091 000524-00130 000524-00132
000524-00340 000551-00152 000551-00170 000769-00093
000769-00150 000769-00291 000802-00166 000802-00412
000876-00074 000876-00078 000876-00079 000904-00287
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001258-01040 001339-00127 001526-00208 001526-00496
001812-00136 001842-00053 001842-00105 002124-00085
002124-00551 002124-00743 002217-00361 002217-00467
002217-00472 002269-00100 002393-00242 002393-00356
002935-00038 002935-00138 002935-00329 003051-00030
003743-00001 003743-00197 003743-00266 003743-00278
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005481-00151 005481-00185 005549-00024 005549-00027
005905-00082 005905-00086 005905-00255 005905-00292
005905-00334 005905-00408 006735-00029 006735-00100
006735-00113 007001-00005 007001-00052 007001-00055
007401-00156 007401-00297 007467-00057 008934-00059
009779-00026 009779-00136 009779-00202 009859-00112
010163-00001 010163-00052 010163-00054 010163-00062
010226-00006 011656-00014 011656-00015 011682-00027
014775-00013 014775-00030 019713-00038 033722-00004
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089 037686-00028 040831-00007 042463-00003

Listing of Registration Numbers By Site (continued)

Cotton (continued)

042463-00039 044317-00019 044317-00033

/01010AA Cranberry

000279-01251 000279-01611 000400-00202 000400-00210
000400-00347 000476-01430 000524-00091 000524-00130
000524-00132 000524-00340 000904-00258 000904-00260
000904-00275 001202-00251 002124-00606 002393-00214
002393-00242 002393-00272 002935-00329 005905-00082
005905-00086 005905-00187 007401-00156 007401-00297
008590-00201 008590-00204 011682-00027 014775-00013
014775-00030 034704-00002 034704-00009 034704-00085

/10010AA Cucumber

000072-00314 000239-01268 000264-00359 000279-00337
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000279-01368 000279-01611 000400-00202 000400-00210
000400-00215 000400-00347 000476-00206 000476-00215
000476-00230 000476-00946 000476-01430 000476-01441
000524-00091 000524-00130 000524-00132 000524-00138
000524-00139 000524-00140 000524-00141 000524-00266
000524-00290 000524-00340 000595-00132 000682-00020
000682-00038 000682-00040 000682-00041 000682-00042
000682-00052 000769-00077 000769-00093 000769-00150
000769-00291 000802-00166 000802-00412 000829-00062
000829-00166 000876-00074 000876-00078 000876-00079
000904-00260 001202-00166 001202-00252 001202-00265
001339-00127 001439-00143 001526-00496 001598-00038
001812-00099 001842-00010 002124-00085 002124-00146
002124-00551 002124-00606 002124-00743 002217-00361
002217-00467 002269-00100 002393-00272 002935-00038
002935-00329 003468-00037 003743-00001 003743-00197
003743-00266 003743-00278 004185-00149 004185-00152
004185-00320 004185-00401 005481-00151 005481-00185
005905-00082 005905-00086 005905-00187 005905-00210
005905-00255 005905-00292 005905-00334 005905-00408
006735-00029 006735-00100 006735-00113 007001-00005
007001-00052 007001-00055 007401-00156 007401-00297
007467-00057 008590-00110 008590-00201 008590-00204
008773-00005 008934-00059 009859-00112 009859-00127
009859-00137 009859-00140 009859-00214 009859-00260
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010226-00006 011656-00014 011656-00015 011656-00062
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014775-00036 019713-00038 033722-00004 034704-00002
034704-00009 034704-00056 034704-00085 034704-00088
034704-00089 034704-00142 034704-00175 034704-00178

Listing of Registration Numbers By Site (continued)

Cucumber (continued)

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/01011AA **Currant**

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000400-00215 000524-00091 000524-00130 000524-00132
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001202-00251 001202-00252 001202-00265 001526-00496
002393-00242 002393-00356 005905-00082 005905-00086
005905-00187 005905-00255 007401-00156 007401-00297
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/06004AA **Date**

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/01004AA **Dewberry**

000279-00337 000279-00702 000279-01251 000279-01611
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001202-00166 001202-00251 001202-00252 001202-00265
001526-00496 002935-00038 005905-00082 005905-00086
005905-00187 005905-00255 034704-00089 040831-00002
045639-00035

/11001AA **Eggplant**

000279-00337 000279-00447 000279-00464 000279-00702
000279-01611 000279-01957 000400-00202 000400-00210
000400-00215 000400-00347 000476-00206 000476-00215
000476-00603 000476-00946 000476-01430 000524-00091
000524-00130 000524-00132 000524-00138 000524-00139
000524-00140 000524-00141 000524-00266 000524-00290
000524-00340 000682-00038 000769-00093 000769-00150
000802-00166 000802-00412 000904-00260 001202-00166
001202-00252 001202-00265 001339-00127 001439-00143
001526-00496 001990-00404 001990-00438 002393-00242
002393-00272 002935-00038 002935-00138 004185-00401
005905-00082 005905-00086 005905-00187 005905-00255
005905-00292 005905-00334 006735-00100 006735-00113
007001-00055 007401-00156 007401-00297 009779-00205
009859-00131 009859-00214 011656-00062 011682-00027
014775-00012 014775-00013 014775-00030 014775-00036
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034704-00085 034704-00088 034704-00089 034704-00142
035222-00003 042057-00018 042057-00054 044317-00019

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Listing of Registration Numbers By Site (continued)

/13015AA **Endive**
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000400-00215 000476-00206 000476-00946 000476-01441
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000524-00139 000524-00140 000524-00141 000524-00266
000524-00290 000524-00340 000769-00093 000769-00150
000802-00166 000802-00412 001202-00252 001202-00265
001526-00496 002393-00356 005905-00082 005905-00086
005905-00187 005905-00255 005905-00295 006735-00100
006735-00113 007001-00055 007401-00156 007401-00297
009779-00205 009859-00112 010163-00052 010163-00054
011682-00027 014775-00012 014775-00013 014775-00030
014775-00036 019713-00038 034704-00002 034704-00009
034704-00085 034704-00088 034704-00089 035222-00003

/06005AA **Fig**
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000279-01611 000279-02230 000400-00210 000524-00091
000524-00130 000524-00132 000524-00340 001202-00251
001202-00265 001526-00496 005905-00082 005905-00086
007001-00055 007401-00156 007401-00297 011682-00027
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034704-00056 034704-00085 034704-00088 034704-00089

/03005AA **Filbert**
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000524-00340 001526-00496 007401-00156 007401-00297
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034704-00009 034704-00085

/14007AA **Garlic**
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001202-00166 001526-00208 001526-00496 002935-00138
005905-00082 005905-00086 006735-00100 006735-00113
006937-00013 007001-00005 007001-00052 007401-00156
007401-00297 011656-00014 011682-00027 014775-00013
014775-00030 034704-00002 034704-00009 034704-00085
034704-00088 034704-00089 035222-00003

/01013AA **Gooseberry**
000279-01251 000400-00215 000524-00091 000524-00130
000524-00132 000524-00340 000876-00074 000876-00078
000876-00079 001202-00251 001202-00252 001202-00265
001526-00496 005905-00255 007401-00156 007401-00297
011682-00027 014775-00013 014775-00030 034704-00002
034704-00009 034704-00085 040831-00002

Listing of Registration Numbers By Site (continued)

/01014AA **Grapes**

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000279-00702 000279-00909 000279-01251 000279-01368
000279-01611 000279-02230 000400-00202 000400-00210
000400-00215 000400-00347 000476-00206 000476-00215
000476-00230 000476-00603 000476-00946 000476-01430
000476-01441 000524-00091 000524-00130 000524-00132
000524-00340 000682-00039 000682-00040 000682-00041
000682-00052 000682-00062 000769-00077 000769-00093
000769-00150 000769-00291 000802-00166 000802-00412
000904-00260 001202-00166 001202-00251 001202-00252
001202-00265 001439-00129 002393-00242 002393-00272
002393-00356 002935-00038 002935-00138 002935-00329
004185-00401 005481-00151 005481-00185 005905-00082
005905-00086 005905-00187 005905-00255 005905-00408
006735-00100 007001-00005 007001-00052 007001-00055
007401-00156 007401-00297 008590-00201 008590-00204
008773-00005 008934-00059 010163-00052 010163-00054
010163-00062 011656-00014 011656-00015 011656-00062
011682-00027 012130-00027 014775-00013 014775-00030
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089 034704-00090 040831-00017 042057-00036
042057-00095

/22001AA **Grasses (Forage)**

000239-01268 000524-00091 000524-00130 000524-00132
000524-00340 000682-00062 000769-00291 000876-00074
000876-00078 000876-00079 001526-00496 004185-00120
005905-00086 005905-00408 006735-00100 006735-00113
007401-00156 007401-00297 008773-00005 009779-00026
009779-00136 010163-00001 011682-00027 014775-00013
014775-00030 034704-00002 034704-00009 034704-00085
040831-00002

/08020AA **Hops**

000279-00464 000279-01611 000400-00202 000400-00210
000400-00215 000476-00206 000476-00215 000524-00091
000524-00130 000524-00132 000524-00340 000682-00039
000682-00062 001202-00166 001202-00252 001526-00496
002935-00038 002935-00138 002935-00329 005905-00082
005905-00086 005905-00255 007401-00156 007401-00297
011682-00027 014775-00013 014775-00030 034704-00002
034704-00009 034704-00085 034704-00088 034704-00089

/13011AA **Kale**

000072-00314 000239-01268 000264-00359 000279-00337
000279-00447 000279-00464 000279-00702 000279-01019
000279-01251 000279-01368 000279-01611 000279-01957
000279-02069 000400-00202 000400-00210 000400-00215

Listing of Registration Numbers By Site (continued)

Kale (continued)

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000524-00140 000524-00141 000524-00266 000524-00290
000524-00340 000682-00020 000682-00040 000682-00041
000682-00042 000682-00052 000769-00077 000769-00093
000769-00150 000769-00291 000802-00166 000802-00412
000829-00062 000829-00166 000876-00074 000876-00078
000876-00079 000904-00258 000904-00275 001202-00251
001202-00252 001339-00127 001439-00129 001439-00143
001526-00496 001842-00010 002124-00085 002124-00551
002124-00606 002217-00361 002393-00242 002393-00272
002393-00356 002935-00038 002935-00138 002935-00329
003743-00197 003743-00266 004185-00152 004185-00320
004185-00401 005481-00151 005481-00185 005905-00082
005905-00086 005905-00187 005905-00210 005905-00255
005905-00292 005905-00334 005905-00408 006735-00100
006735-00113 007001-00055 007401-00156 007401-00297
007467-00057 008590-00049 008590-00201 008590-00204
008773-00005 009779-00026 009779-00136 009779-00202
009779-00205 009859-00112 009859-00127 010163-00052
010163-00054 011656-00014 011656-00015 011656-00062
011682-00027 012130-00027 014775-00012 014775-00013
014775-00030 014775-00036 019713-00038 033722-00004
034704-00002 034704-00009 034704-00056 034704-00085
034704-00088 034704-00089 034704-00175 035222-00003
037686-00028 040831-00002 042057-00003 042057-00036
042057-00054 042057-00095 042463-00003 044317-00019
044317-00032 044317-00033

/13012AA Kohlrabi

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000279-01611 000400-00202 000400-00210 000476-00603
000524-00091 000524-00130 000524-00132 000524-00340
000769-00093 001526-00496 005905-00082 005905-00086
005905-00187 006735-00100 006735-00113 007001-00055
007401-00156 007401-00297 008773-00005 011682-00027
014775-00013 014775-00030 034704-00002 034704-00009
034704-00056 034704-00085 034704-00088 034704-00089
035222-00003

/13020AA Lettuce

000239-01268 000264-00359 000279-00337 000279-00447
000279-00464 000279-00702 000279-00909 000279-01019
000279-01251 000279-01368 000279-01611 000279-01957
000279-02069 000279-02204 000279-02230 000400-00202
000400-00347 000476-00206 000476-00215 000476-00230

Listing of Registration Numbers By Site (continued)

Lettuce (continued)

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000524-00140 000524-00141 000524-00266 000524-00290
000524-00340 000595-00249 000595-00302 000682-00038
000769-00093 000769-00150 000802-00166 000802-00412
000876-00074 000876-00078 000876-00079 000904-00260
001202-00166 001202-00252 001202-00265 001339-00127
001439-00143 001526-00208 001526-00496 002124-00085
002124-00551 002124-00606 002217-00361 002217-00467
002393-00242 002393-00272 002393-00356 002935-00038
002935-00138 002935-00329 003468-00037 004185-00320
004185-00401 005481-00151 005481-00185 005905-00082
005905-00086 005905-00187 005905-00255 005905-00295
005905-00334 005905-00408 006735-00029 006735-00100
006735-00113 006937-00013 007001-00005 007001-00052
007001-00055 007401-00156 007401-00297 007467-00057
008590-00110 008590-00201 008590-00204 008773-00005
009779-00205 009859-00112 010163-00001 010163-00052
010163-00054 010163-00062 010226-00006 011656-00014
011656-00015 011656-00062 011682-00027 014775-00012
014775-00013 014775-00030 014775-00036 019713-00038
033722-00004 034704-00002 034704-00009 034704-00056
034704-00085 034704-00088 034704-00089 034704-00142
034704-00175 035222-00003 037686-00044 040831-00002
042057-00010 042057-00018 042057-00036 042057-00037
042057-00054 044317-00019

/13020CA Lettuce (Greenhouse)

000400-00210 000400-00215 034704-00175

/01005AA Loganberry

000279-01251 000279-01611 000400-00202 000400-00210
000400-00215 000476-00206 000524-00091 000524-00130
000524-00132 000524-00340 000876-00074 000876-00078
000876-00079 001202-00166 001202-00251 001202-00252
001202-00265 001526-00496 005905-00082 005905-00086
005905-00187 005905-00255 007401-00156 007401-00297
011682-00027 014775-00013 014775-00030 034704-00002
034704-00009 034704-00085 034704-00088 034704-00089
040831-00002

/06007AA Mango

001202-00251 001202-00265 001526-00496 019713-00038

/10001AA Melons

000072-00314 000239-01268 000264-00359 000279-00337
000279-00464 000279-00702 000279-01019 000279-01251

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Appendix B

Listing of Registration Numbers By Site (continued)

Melons (continued)

000279-01368 000279-01611 000279-01957 000400-00202
000400-00210 000400-00215 000400-00347 000476-00206
000476-00215 000476-00230 000476-00946 000476-01430
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000524-00138 000524-00139 000524-00140 000524-00141
000524-00266 000524-00290 000524-00340 000595-00132
000682-00020 000682-00038 000682-00040 000682-00041
000682-00042 000682-00052 000769-00077 000769-00093
000769-00150 000769-00291 000769-00442 000802-00166
000802-00412 000829-00062 000829-00166 000876-00074
000876-00078 000876-00079 000904-00260 001202-00166
001202-00252 001202-00265 001339-00127 001439-00143
001526-00208 001526-00496 001598-00038 001812-00099
001842-00010 001990-00404 001990-00438 002124-00146
002124-00606 002217-00361 002217-00467 002269-00100
002269-00169 002393-00242 002393-00272 002393-00356
002935-00038 002935-00329 003468-00037 003743-00001
003743-00197 003743-00266 003743-00278 004185-00149
004185-00152 004185-00320 004185-00401 005481-00151
005481-00185 005905-00082 005905-00086 005905-00187
005905-00210 005905-00255 005905-00292 005905-00334
005905-00408 006735-00029 006735-00100 006735-00113
006937-00013 007001-00005 007001-00052 007001-00055
007401-00156 007401-00297 007467-00057 008590-00110
008590-00201 008590-00204 008934-00059 009779-00026
009779-00136 009779-00205 009859-00112 009859-00127
009859-00137 009859-00140 009859-00260 010163-00052
010163-00054 010226-00006 011656-00014 011656-00015
011656-00062 011682-00027 012130-00027 014775-00012
014775-00013 014775-00030 014775-00036 019713-00038
033722-00004 034704-00002 034704-00009 034704-00085
034704-00088 034704-00089 034704-00142 034704-00175
034704-00178 035222-00003 040831-00002 042057-00003
042057-00010 042057-00018 042057-00036 042057-00037
042057-00054 042057-00095 044215-00016 044317-00019
044317-00033 045115-00041

/13021AA Mustard Greens

000072-00314 000239-01268 000264-00359 000279-00337
000279-00447 000279-00464 000279-00702 000279-01019
000279-01251 000279-01368 000279-01611 000400-00202
000400-00210 000400-00215 000400-00347 000476-00206
000476-00230 000476-00946 000476-01430 000476-01441
000524-00091 000524-00130 000524-00132 000524-00340
000682-00020 000682-00040 000682-00041 000682-00042
000682-00052 000769-00077 000769-00093 000769-00150
000769-00291 000802-00166 000802-00412 000829-00062

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Appendix B

Listing of Registration Numbers By Site (continued)

Mustard Greens (continued)

000829-00166 000876-00074 000876-00078 000876-00079
000904-00258 000904-00260 000904-00275 001202-00251
001202-00252 001339-00127 001439-00143 001526-00496
001598-00038 001812-00136 001842-00010 002124-00085
002124-00551 002124-00606 002217-00361 002393-00242
002393-00272 002393-00356 002935-00038 002935-00138
002935-00329 003468-00037 003743-00197 003743-00266
004185-00320 004185-00401 005481-00151 005481-00185
005905-00082 005905-00086 005905-00187 005905-00210
005905-00255 005905-00292 005905-00334 005905-00408
006735-00100 006735-00113 007001-00055 007401-00156
007401-00297 007467-00057 008590-00201 008590-00204
008773-00005 009779-00026 009779-00136 009779-00202
009859-00112 009859-00127 009859-00131 009859-00214
010163-00052 010163-00054 010226-00006 011656-00014
011656-00015 011656-00062 011682-00027 012130-00027
014775-00013 014775-00030 019713-00038 033722-00004
034704-00002 034704-00009 034704-00056 034704-00085
034704-00142 034704-00175 035222-00003 037686-00028
037686-00044 040831-00002 042057-00003 042057-00036
042057-00095 042463-00003 044317-00019 044317-00032
044317-00033

/03003AA Nectarine

000279-00447 000279-00464 000279-00909 000279-01368
000279-01611 000279-02230 000400-00202 000400-00210
000400-00215 000476-00206 000476-00230 000476-00603
000476-00946 000476-01441 000524-00091 000524-00130
000524-00132 000524-00340 000802-00166 000802-00412
001202-00166 001202-00251 001202-00252 001202-00265
001526-00496 002393-00356 002935-00038 002935-00138
002935-00329 005481-00151 005481-00185 005905-00082
005905-00086 005905-00187 005905-00255 006735-00100
007001-00005 007001-00052 007001-00055 007401-00156
007401-00297 010163-00052 010163-00054 010163-00062
011656-00014 011656-00015 011656-00062 011682-00027
014775-00013 014775-00030 034704-00002 034704-00009
034704-00056 034704-00085 034704-00088 034704-00089
034704-00090 042057-00003 042057-00036 042057-00095

/28062AA Oats

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000279-01251 000279-01611 000400-00202 000400-00210
000400-00347 000476-00206 000476-00215 000476-00230
000476-00603 000476-00946 000476-01430 000476-01441
000524-00091 000524-00130 000524-00132 000524-00340
000551-00152 000551-00170 000682-00020 000682-00038

Listing of Registration Numbers By Site (continued)

Oats (continued)

000682-00040 000682-00041 000682-00042 000682-00052
000682-00062 000769-00093 000769-00150 000769-00291
000802-00166 000802-00412 000876-00074 000876-00078
000876-00079 000904-00287 001202-00251 001258-01040
001339-00127 001526-00496 001842-00053 001842-00105
001990-00404 001990-00438 002124-00606 002217-00361
002217-00467 002217-00472 002393-00214 002393-00242
002393-00272 002393-00356 002737-00009 002737-00028
002935-00038 002935-00329 003468-00037 003743-00001
003743-00197 003743-00278 004185-00149 004185-00152
004185-00320 004185-00401 005481-00151 005481-00185
005905-00082 005905-00086 005905-00210 005905-00255
005905-00334 005905-00408 006735-00029 006735-00100
006735-00113 007001-00055 007401-00156 007401-00297
008590-00201 008590-00204 008773-00005 009768-00023
009779-00026 009779-00136 009859-00112 010163-00001
010163-00052 010163-00054 010163-00062 010226-00006
011656-00014 011656-00015 011656-00062 011682-00027
012130-00027 014775-00013 014775-00030 019713-00038
033722-00004 034704-00002 034704-00009 034704-00056
034704-00085 034704-00088 034704-00089 034704-00175
040831-00002 040831-00007 040831-00043 042057-00003
042057-00010 042057-00018 042057-00036 042057-00037
042057-00095 044215-00016 044317-00019 044317-00033

/15015AA Okra

000279-00337 000279-00447 000279-00702 000279-01368
000279-01611 000400-00202 000400-00210 000476-00603
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000769-00093 000769-00150 000802-00166 000802-00412
001339-00127 001526-00496 004185-00401 005905-00082
005905-00086 005905-00187 005905-00334 006735-00100
006735-00113 007001-00055 007401-00156 007401-00297
011682-00027 014775-00013 014775-00030 034704-00002
034704-00009 034704-00085 034704-00089 035222-00003
044317-00019

/28014AA Olive

000279-00447 000279-01251 000400-00215 000476-00206
000476-00230 000476-00603 000476-00946 000476-01441
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000802-00166 000802-00412 001202-00252 001526-00496
002393-00356 002935-00038 005905-00082 005905-00086
005905-00255 007001-00055 007401-00156 007401-00297
010163-00052 010163-00054 010163-00062 011656-00062
011682-00027 014775-00013 014775-00030 034704-00002
034704-00009 034704-00056 034704-00085 034704-00088

Listing of Registration Numbers By Site (continued)

Olive (continued)

040831-00017

/14011AA **Onions**

000239-01268 000264-00359 000279-00337 000279-00447
000279-00464 000279-00909 000279-01251 000279-01611
000279-02069 000400-00202 000400-00210 000400-00215
000400-00347 000476-00206 000476-00215 000476-00230
000476-00603 000476-00946 000476-01430 000476-01441
000476-01641 000524-00091 000524-00130 000524-00132
000524-00138 000524-00139 000524-00140 000524-00141
000524-00266 000524-00290 000524-00340 000595-00132
000595-00249 000682-00020 000682-00038 000682-00040
000682-00041 000682-00042 000769-00077 000769-00093
000769-00150 000769-00442 000802-00166 000802-00412
000904-00258 000904-00260 000904-00275 001202-00166
001202-00252 001439-00143 001439-00164 001526-00208
001526-00496 002124-00606 002393-00214 002393-00242
002393-00272 002393-00356 002737-00009 002737-00028
002935-00038 002935-00138 002935-00329 003468-00037
004185-00149 004185-00152 004185-00401 005481-00151
005481-00185 005905-00082 005905-00086 005905-00187
005905-00210 005905-00292 005905-00408 006735-00029
006735-00100 006735-00113 007001-00005 007001-00052
007001-00055 007401-00156 007401-00297 007467-00057
008590-00049 008590-00110 008590-00201 008590-00204
008773-00005 009779-00205 010163-00052 010163-00054
010226-00006 011656-00014 011656-00015 011656-00062
011682-00027 014775-00012 014775-00013 014775-00030
014775-00036 019713-00038 019713-00100 034704-00002
034704-00009 034704-00056 034704-00085 034704-00088
034704-00089 034704-00142 034704-00175 035222-00003
040831-00017 042057-00003 042057-00010 042057-00036
042057-00037 045115-00041

/28035AA **Pastures**

000239-01268 000524-00091 000524-00130 000524-00132
000524-00138 000524-00139 000524-00140 000524-00141
000524-00266 000524-00290 000769-00291 000802-00166
009779-00205 014775-00012 014775-00036

/28035AA **Pastures (Irrigated)**

000279-01611 000476-00603 000476-00946 000476-01441
001526-00496 002393-00356 005481-00099 005481-00127
005481-00151 005905-00109 010163-00052 010163-00054
034704-00085

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Appendix B

Listing of Registration Numbers By Site (continued)

/05004AA **Peach**

000072-00314 000239-01268 000264-00359 000279-00336
000279-00447 000279-00464 000279-00909 000279-01019
000279-01251 000279-01368 000279-01611 000279-02230
000400-00202 000400-00210 000400-00215 000400-00347
000476-00206 000476-00230 000476-00603 000476-00946
000476-01430 000476-01441 000524-00091 000524-00130
000524-00132 000524-00340 000682-00039 000682-00040
000682-00041 000682-00052 000682-00062 000769-00077
000769-00291 000802-00166 000802-00412 000829-00166
000876-00074 000876-00078 000876-00079 000904-00260
000904-00269 000904-00270 001202-00166 001202-00251
001202-00252 001202-00265 001345-00008 001439-00129
001439-00143 001526-00496 001812-00105 001842-00010
002124-00146 002124-00606 002393-00242 002393-00272
002393-00356 002935-00038 002935-00138 002935-00329
003743-00253 005481-00151 005481-00185 005905-00082
005905-00086 005905-00187 005905-00255 005905-00292
005905-00408 006735-00100 007001-00005 007001-00052
007001-00055 007401-00156 007401-00297 008590-00201
008590-00204 008773-00005 008934-00059 009859-00112
009859-00127 010163-00052 010163-00054 010163-00062
011656-00014 011656-00015 011656-00062 011682-00027
012130-00027 014775-00013 014775-00030 019713-00038
033955-00302 034704-00002 034704-00009 034704-00056
034704-00085 034704-00088 034704-00089 034704-00090
034704-00175 034704-00178 040831-00002 040831-00017
040831-00061 042057-00003 042057-00010 042057-00036
042057-00095 044317-00032

/28015AA **Peanuts**

000279-02204 000476-00603 000476-01641 000524-00091
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000524-00140 000524-00141 000524-00266 000524-00290
000524-00340 000769-00093 000769-00150 000769-00291
000769-00442 001439-00164 001526-00496 001812-00124
001842-00278 002269-00169 004185-00149 005905-00082
005905-00086 005905-00295 005905-00334 006735-00100
006735-00113 007401-00156 007401-00297 009779-00026
009779-00136 009779-00202 009779-00205 009859-00153
009859-00213 011682-00027 014775-00013 014775-00030
014775-00036 019713-00100 034704-00002 034704-00009
034704-00085 037686-00033 042463-00003 042463-00006
044317-00038 045115-00041

/04003AA **Pear**

000239-01268 000264-00359 000279-00336 000279-00337
000279-00447 000279-00702 000279-00909 000279-01251
000279-01368 000279-01611 000279-02230 000400-00210

Listing of Registration Numbers By Site (continued)

Pear (continued)

000400-00215 000400-00347 000476-00206 000476-00230
000476-00603 000476-00946 000476-01430 000476-01441
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000682-00039 000682-00040 000682-00041 000682-00052
000802-00166 000802-00412 000876-00074 000876-00078
000876-00079 000904-00269 000904-00270 001202-00166
001202-00251 001202-00252 001202-00265 001439-00129
001439-00143 001526-00496 002393-00242 002393-00272
002393-00356 002935-00038 002935-00138 002935-00329
004581-00003 004581-00179 005481-00151 005481-00185
005905-00082 005905-00086 005905-00187 005905-00255
005905-00408 007001-00005 007001-00052 007001-00055
007401-00156 007401-00297 008590-00201 008590-00204
008934-00059 010163-00052 010163-00054 010163-00062
011656-00014 011656-00015 011656-00062 011682-00027
012130-00027 014775-00013 014775-00030 033955-00302
034704-00002 034704-00009 034704-00056 034704-00085
034704-00088 034704-00089 034704-00090 034704-00175
040831-00002 040831-00017 040831-00061 042057-00003
042057-00010 042057-00036 042057-00037 042057-00095

/28016AA

Peas

000072-00314 000239-01268 000279-00337 000279-00447
000279-00464 000279-00702 000279-00909 000279-01251
000279-01611 000279-01957 000279-02069 000400-00215
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000476-00946 000476-01441 000524-00091 000524-00130
000524-00132 000524-00138 000524-00139 000524-00140
000524-00141 000524-00266 000524-00290 000524-00340
000551-00152 000551-00170 000595-00132 000595-00249
000595-00302 000682-00020 000682-00038 000682-00042
000682-00062 000769-00093 000769-00150 000769-00442
000802-00166 000802-00412 000876-00074 000876-00078
000876-00079 000904-00260 000904-00287 001202-00166
001202-00252 001202-00265 001258-01040 001439-00143
001526-00496 001842-00010 001842-00053 001842-00105
001990-00404 001990-00438 002124-00146 002124-00743
002217-00472 002269-00100 002269-00169 002393-00214
002393-00356 002935-00038 002935-00138 002935-00329
004185-00149 004185-00152 005481-00151 005481-00185
005905-00082 005905-00086 005905-00187 005905-00255
005905-00408 006735-00100 006735-00113 006937-00013
007001-00005 007001-00052 007001-00055 007401-00156
007401-00297 008773-00005 008934-00059 009768-00023
009779-00026 009779-00136 009779-00202 009779-00205
009859-00112 010163-00052 010163-00054 011656-00014
011656-00015 011656-00062 011682-00027 014775-00012

Listing of Registration Numbers By Site (continued)

Peas (continued)

014775-00013 014775-00030 014775-00036 019713-00038
019713-00100 034704-00002 034704-00009 034704-00085
034704-00088 034704-00089 034704-00142 035222-00003
037686-00044 040831-00002 040831-00007 040831-00017
042057-00003 042057-00010 042057-00018 042057-00036
042057-00037 042057-00054 042463-00039 045115-00041

/03008AA Pecan

000279-01251 000476-00206 000524-00091 000524-00130
000524-00132 000524-00340 000769-00077 000769-00093
000769-00150 000769-00291 001439-00143 001526-00496
001812-00105 001812-00136 002935-00038 004185-00149
004185-00152 005905-00255 005905-00334 006735-00100
007001-00055 007401-00156 007401-00297 009779-00026
009779-00136 011656-00062 011682-00027 014775-00013
014775-00030 034704-00002 034704-00009 034704-00056
034704-00085 044317-00032

/28017AA Peppers

000239-01268 000279-00337 000279-00464 000279-00702
000279-01251 000279-01368 000279-01611 000279-01957
000400-00202 000400-00210 000400-00215 000400-00347
000476-00206 000476-00215 000476-00230 000476-00603
000476-00946 000476-01430 000476-01441 000524-00091
000524-00130 000524-00132 000524-00138 000524-00139
000524-00140 000524-00141 000524-00266 000524-00290
000524-00340 000595-00302 000682-00020 000682-00038
000682-00040 000682-00041 000682-00042 000769-00077
000769-00093 000769-00150 000802-00412 000876-00074
000876-00078 000876-00079 000904-00258 000904-00260
000904-00275 001202-00166 001202-00252 001202-00265
001339-00127 001439-00129 001439-00143 001526-00496
001990-00404 001990-00438 002124-00146 002124-00606
002217-00361 002217-00467 002393-00242 002393-00272
002393-00356 002935-00038 002935-00138 002935-00329
003468-00037 004185-00149 004185-00152 004185-00320
004185-00401 005481-00151 005481-00185 005905-00082
005905-00086 005905-00187 005905-00255 005905-00292
005905-00334 005905-00408 006735-00029 006735-00100
006735-00113 006937-00013 007001-00005 007001-00052
007001-00055 007401-00156 007401-00297 007467-00057
008590-00110 008590-00201 008590-00204 009779-00026
009779-00136 009779-00202 009779-00205 009859-00112
009859-00127 009859-00131 009859-00137 009859-00140
009859-00214 009859-00260 010163-00052 010163-00054
011656-00014 011656-00015 011656-00062 011682-00027
012130-00027 014775-00012 014775-00013 014775-00030

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Listing of Registration Numbers By Site (continued)

Peppers (continued)

014775-00036 019713-00038 033722-00004 034704-00002
034704-00009 034704-00085 034704-00088 034704-00089
034704-00142 034704-00175 035222-00003 040831-00002
040831-00017 042057-00018 042057-00036 042057-00054
042057-00095 044317-00019

/06013AA **Pineapple**

000279-01251 000524-00091 000524-00130 000524-00132
000524-00340 007401-00156 007401-00297 011682-00027
014775-00013 014775-00030 019713-00038 034704-00002
034704-00009 034704-00085

/05005AA **Plum**

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000279-01368 000279-01611 000279-02230 000400-00202
000400-00210 000400-00215 000400-00347 000476-00206
000476-00230 000476-00603 000476-00946 000476-01430
000476-01441 000524-00091 000524-00130 000524-00132
000524-00340 000682-00040 000682-00041 000682-00052
000682-00062 000802-00166 000802-00412 000876-00074
000876-00078 000876-00079 001202-00166 001202-00251
001202-00252 001202-00265 001345-00008 001439-00129
001439-00143 001526-00496 002393-00242 002393-00272
002393-00356 002935-00038 002935-00138 002935-00329
004581-00003 004581-00179 005481-00151 005481-00185
005905-00082 005905-00086 005905-00187 005905-00255
005905-00408 007001-00005 007001-00052 007001-00055
007401-00156 007401-00297 008590-00201 008590-00204
008773-00005 008934-00059 010163-00052 010163-00054
010163-00062 011656-00014 011656-00015 011656-00062
011682-00027 014775-00013 014775-00030 033955-00302
034704-00002 034704-00009 034704-00056 034704-00085
034704-00088 034704-00089 034704-00090 040831-00002
040831-00017 040831-00061 042057-00003 042057-00010
042057-00036 042057-00037 042057-00095

/14013AA **Potato**

000072-00314 000239-01268 000264-00359 000279-00336
000279-00337 000279-00447 000279-00702 000279-01251
000279-01368 000279-01611 000279-02069 000279-02204
000400-00202 000400-00210 000400-00215 000400-00347
000476-00206 000476-00215 000476-00230 000476-00603
000476-00946 000476-01430 000476-01441 000476-01641
000524-00091 000524-00130 000524-00132 000524-00138
000524-00139 000524-00140 000524-00141 000524-00266
000524-00290 000524-00340 000551-00152 000551-00170
000595-00249 000595-00302 000682-00038 000682-00039

Listing of Registration Numbers By Site (continued)

Potato (continued)

000682-00040 000769-00077 000769-00093 000769-00150
000769-00291 000802-00166 000802-00412 000829-00062
000829-00166 000876-00074 000876-00078 000876-00079
000904-00258 000904-00260 000904-00275 000904-00289
001202-00166 001202-00252 001202-00265 001208-00035
001258-01040 001339-00127 001439-00129 001439-00143
001439-00164 001526-00208 001526-00496 001842-00010
001842-00053 001842-00105 001990-00404 001990-00438
002124-00085 002124-00146 002124-00424 002124-00551
002124-00606 002124-00743 002217-00361 002217-00467
002217-00472 002269-00100 002393-00214 002393-00242
002393-00272 002393-00356 002935-00038 002935-00138
002935-00329 003468-00037 003743-00001 003743-00197
003743-00266 003743-00278 004185-00149 004185-00152
004185-00320 004185-00401 005481-00151 005481-00185
005905-00082 005905-00086 005905-00187 005905-00210
005905-00255 005905-00292 005905-00295 005905-00334
005905-00408 006735-00100 006735-00113 006937-00013
007001-00005 007001-00052 007001-00055 007401-00156
007401-00297 007467-00057 008590-00049 008590-0011[illegible]
008590-00201 008590-00204 008773-00005 008934-00059
009779-00026 009779-00136 009779-00202 009779-00205
009859-00112 009859-00127 009859-00131 009859-00137
009859-00140 009859-00153 009859-00214 009859-00260
010163-00052 010163-00054 011656-00014 011656-00015
011656-00062 011682-00027 012130-00027 014775-00012
014775-00013 014775-00030 019713-00038 033722-00004
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089 034704-00142 034704-00175 034704-00178
035222-00003 040831-00002 040831-00007 040831-00017
040831-00[illegible]61 042057-00003 042057-00010 042057-00018
042057-00036 042057-00037 042057-00054 042057-00095
042463-00003 042463-00006 044317-00019

/05006AA Prune

000279-00336 000279-00447 000279-00909 000279-01368
000279-01611 000279-02230 000400-00202 000400-00210
000400-00215 000400-00347 000476-00206 000476-00230
000476-00603 000476-00946 000476-01430 000476-01441
000524-00091 000524-00130 000524-00132 000524-00340
000682-00040 000682-00041 000682-00052 000682-00062
000802-00166 000802-00412 000876-00074 000876-00078
000876-00079 001202-00166 001202-00251 001202-00252
001202-00265 001345-00008 001439-00129 001439-00143
001526-00496 002393-00242 002393-00272 002393-00356
002935-00038 002935-00138 002935-00329 005481-00151
005481-00185 005905-00082 005905-00086 005905-00187

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Listing of Registration Numbers By Site (continued)

Prune (continued)

005905-00255 005905-00408 007001-00005 007001-00052
007001-00055 007401-00156 007401-00297 008590-00201
008590-00204 008934-00059 010163-00052 010163-00054
010163-00062 011656-00014 011656-00015 011656-00062
011682-00027 014775-00013 014775-00030 033955-00302
034704-00056 034704-00088 034704-00089 034704-00090
040831-00002 040831-00017 040831-00061 042057-00003
042057-00036 042057-00037 042057-00095

/10011AA **Pumpkin**

000072-00314 000279-00464 000279-01019 000279-01251
000279-01611 000400-00202 000400-00210 000400-00215
000524-00091 000524-00130 000524-00132 000524-00340
000769-00093 000769-00150 000829-00166 000876-00074
000876-00078 000876-00079 001202-00252 001202-00265
001526-00496 002935-00038 002935-00138 005905-00082
005905-00086 005905-00187 005905-00255 006735-00100
006735-00113 007001-00005 007401-00156 007401-00297
011682-00027 014775-00013 014775-00030 034704-00002
034704-00009 034704-00085 034704-00088 034704-00089
034704-00142 040831-00002 042057-00010 042057-00037

/04004AA **Quince**

000279-01251 001526-00496

/14014AA **Radish**

000279-01251 000400-00215 000476-00206 000524-00091
000524-00130 000524-00132 000524-00340 000769-00093
000769-00150 001202-00252 001202-00265 001526-00208
001526-00496 005905-00082 005905-00086 005905-00255
006735-00100 006735-00113 007001-00055 007401-00156
007401-00297 007467-00057 009859-00127 011682-00027
014775-00013 014775-00030 034704-00002 034704-00009
034704-00085 034704-00088 034704-00089 034704-00142
035222-00003

/28051BA **Rape (Seed Crop)**

002935-00329

/01006AA **Raspberry**

000279-01251 000279-01611 000400-00202 000400-00210
000476-00215 000524-00091 000524-00130 000524-00132
000524-00340 000876-00074 000876-00078 000876-00079
001526-00496 005905-00082 005905-00086 005905-00187
007401-00156 007401-00297 011682-00027 014775-00013
014775-00030 034704-00088 034704-00089 040831-00002
042057-00037

Listing of Registration Numbers By Site (continued)

/28072AA **Rice**

000279-01611 000400-00210 000476-00603 000476-00946
000476-01441 000524-00091 000524-00130 000524-00132
000524-00340 000802-00166 001202-00265 001526-00496
002393-00356 002935-00138 005481-00099 005481-00127
005481-00151 005905-00086 005905-00109 007001-00005
007401-00156 007401-00297 010163-00052 010163-00054
011656-00015 011682-00027 014775-00013 014775-00030
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089

/14015AA **Rutabaga**

000279-01019 000279-01251 000279-01611 000279-01957
000400-00202 000400-00210 000524-00091 000524-00130
000524-00132 000524-00138 000524-00139 000524-00140
000524-00141 000524-00266 000524-00290 000524-00340
000682-00062 000769-00093 000769-00150 000769-00291
000876-00074 000876-00078 000876-00079 000904-00258
000904-00275 001526-00496 005905-00082 005905-00086
005905-00187 006735-00100 006735-00113 007401-00156
007401-00297 008773-00005 009779-00205 011682-00027
014775-00012 014775-00013 014775-00030 014775-00036
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089 040831-00002 042057-00054

/28076AA **Safflower**

000524-00091 000524-00130 000524-00132 000524-00340
001526-00208 001526-00496 002935-00138 005905-00086
007001-00005 007001-00052 007401-00156 007401-00297
011682-00027 014775-00013 014775-00030 034704-00002
034704-00009 034704-00085 034704-00088 034704-00089

/28019AA **Sorghum**

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000524-00130 000524-00132 000524-00340 000802-00166
000802-00412 001202-00265 001526-00496 002124-00424
002124-00743 002737-00009 002737-00028 002935-00138
005905-00086 006735-00100 006735-00113 007001-00005
007001-00055 007401-00156 007401-00297 007467-00057
008773-00005 009779-00026 009779-00136 010163-00052
010163-00054 010226-00006 011682-00027 014775-00013
014775-00030 034704-00002 034704-00009 034704-00085
034704-00088 034704-00089

/28023AA **Soybeans**

000072-00314 000476-00603 000524-00091 000524-00130
000524-00132 000524-00138 000524-00139 000524-00140
000524-00141 000524-00266 000524-00290 000524-00340
000769-00093 000769-00150 000769-00291 000769-00442

Listing of Registration Numbers By Site (continued)

Soybeans (continued)

001526-00496 002124-00551 005905-00086 006735-00100
006735-00113 007401-00156 007401-00297 009779-00026
009779-00136 009779-00205 011682-00027 014775-00012
014775-00013 014775-00030 014775-00036 019713-00100
034704-00002 034704-00009 034704-00085 045115-00041

/13024AA **Spinach**

000072-00314 000279-00337 000279-00447 000279-00464
000279-00702 000279-00909 000279-01019 000279-01251
000279-01368 000279-01611 000279-02230 000400-00202
000400-00210 000400-00215 000476-00206 000476-00215
000476-00230 000476-00603 000476-00946 000476-01441
000524-00091 000524-00130 000524-00132 000524-00340
000551-00170 000682-00020 000682-00038 000682-00040
000682-00041 000769-00093 000769-00150 000802-00166
000802-00412 000904-00260 001202-00166 001202-00252
001202-00265 001439-00143 001526-00496 001990-00404
001990-00438 002124-00085 002124-00551 002393-00356
002935-00038 002935-00138 002935-00329 004185-00149
004185-00152 004185-00401 005481-00151 005481-00185
005905-00086 005905-00187 005905-00255 005905-00408
006735-00029 006735-00100 006735-00113 006937-00013
007001-00005 007001-00052 007001-00055 007401-00156
007401-00297 007467-00057 008590-00110 008773-00005
009779-00205 010163-00052 010163-00054 011656-00014
011656-00015 011656-00062 011682-00027 014775-00013
014775-00030 019713-00038 034704-00002 034704-00009
034704-00085 034704-00088 034704-00089 034704-00090
034704-00142 035222-00003 040831-00017 042057-00010
042057-00018 042057-00036 042057-00037 042057-00095

/10012AA **Squash**

000072-00314 000239-01268 000264-00359 000279-00337
000279-00447 000279-00464 000279-00702 000279-01019
000279-01251 000279-01368 000279-01611 000400-00202
000400-00210 000400-00215 000400-00347 000476-00206
000476-00215 000476-00230 000476-00946 000476-01430
000476-01441 000524-00091 000524-00130 000524-00132
000524-00340 000595-00302 000682-00020 000682-00038
000682-00040 000682-00041 000682-00042 000682-00052
000769-00077 000769-00093 000769-00150 000769-00291
000802-00166 000802-00412 000829-00062 000829-00166
000876-00074 000876-00078 000876-00079 001202-00252
001202-00265 001339-00127 001439-00143 001526-00496
001598-00038 001812-00099 001842-00010 002124-00085
002124-00146 002124-00551 002124-00606 002217-00361
002217-00467 002393-00242 002393-00272 002393-00356

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Listing of Registration Numbers By Site (continued)

Squash (continued)

002935-00038 002935-00329 003468-00037 003743-00001
003743-00197 003743-00266 003743-00278 004185-00149
004185-00152 004185-00320 004185-00401 005481-00151
005481-00185 005905-00082 005905-00086 005905-00187
005905-00210 005905-00255 005905-00292 005905-00334
005905-00408 006735-00100 006735-00113 007001-00005
007001-00052 007001-00055 007401-00156 007401-00297
007467-00057 008590-00110 008590-00201 008590-00204
009859-00112 009859-00127 009859-00137 009859-00140
009859-00214 009859-00260 010163-00001 010163-00052
010163-00054 010163-00062 010226-00006 011656-00014
011656-00015 011656-00062 011682-00027 012130-00027
014775-00013 014775-00030 019713-00038 033722-00004
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089 034704-00142 034704-00175 034704-00178
035222-00003 040831-00002 042057-00003 042057-00010
042057-00018 042057-00036 042057-00037 042057-00095
044215-00016 044317-00019 044317-00033

/01016AA Strawberry

000264-00359 000279-00447 000279-00464 000279-00909
000279-01251 000279-01368 000279-01611 000279-02230
000400-00202 000400-00210 000400-00215 000400-00347
000476-00206 000476-00215 000476-00230 000476-00603
000476-00946 000476-01430 000476-01441 000524-00091
000524-00130 000524-00132 000524-00340 000682-00040
000682-00041 000682-00062 000769-00077 000769-00093
000769-00150 000802-00166 000802-00412 000876-00074
000876-00078 000876-00079 000904-00258 000904-00260
000904-00275 001202-00166 001202-00252 001339-00127
001345-00008 001526-00496 002124-00146 002124-00606
002393-00242 002393-00272 002393-00356 002935-00038
002935-00138 002935-00329 003342-00071 003743-00278
004185-00149 004185-00152 004185-00401 005481-00151
005481-00185 005905-00086 005905-00187 005905-00210
005905-00255 005905-00295 005905-00334 005905-00408
006937-00013 007001-00052 007001-00055 007401-00297
008590-00201 008590-00204 008773-00005 008934-00059
009859-00112 010163-00001 010163-00052 010163-00054
010163-00062 011656-00014 011656-00015 011656-00062
011682-00027 014775-00013 014775-00030 019713-00038
034704-00002 034704-00009 034704-00056 034704-00085
034704-00088 034704-00089 034704-00175 035222-00003
040831-00002 040831-00017 042057-00003 042057-00018
042057-00037 044317-00019

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Appendix B

Listing of Registration Numbers By Site (continued)

/28020AA Sugar Beets including Sugar Beets
/28020BA (Seed Crop)

000264-00359 000279-00447 000279-01611 000279-02069
000400-00210 000400-00215 000476-00206 000476-00215
000476-00230 000476-00946 000476-01430 000476-01441
000476-01641 000524-00091 000524-00130 000524-00132
000524-00138 000524-00139 000524-00140 000524-00141
000524-00266 000524-00290 000524-00340 000595-00302
000682-00039 000682-00040 000682-00041 000682-00062
000802-00166 000802-00412 000876-00074 000876-00078
000876-00079 001202-00166 001202-00252 001202-00265
001439-00164 001526-00208 001526-00496 001990-00404
001990-00438 002124-00606 002124-00743 002217-00361
002217-00467 002393-00242 002393-00272 002393-00356
002935-00138 002935-00329 003468-00037 004185-00320
005905-00086 005905-00255 006735-00100 006735-00113
006937-00013 007001-00005 007001-00052 007001-00055
007401-00156 007401-00297 008590-00201 008590-00204
008773-00005 009779-00205 010163-00001 010163-00052
010163-00054 010163-00062 010226-00006 011682-00027
014775-00012 014775-00013 014775-00030 014775-00036
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089 034704-00175 035222-00003 040831-00002
042057-00003 044215-00016

/25003AA Sugarcane

000279-02204 000524-00091 000524-00130 000524-00132
000524-00138 000524-00139 000524-00140 000524-00141
000524-00266 000524-00290 000524-00340 000769-00442
000876-00074 000876-00078 000876-00079 001439-00164
002124-00424 005905-00082 005905-00086 005905-00295
006735-00100 006735-00113 007401-00156 007401-00297
009779-00026 009779-00136 009779-00205 011682-00027
014775-00012 014775-00013 014775-00030 014775-00036
019713-00100 034704-00002 034704-00009 034704-00085
035222-00003 045115-00041

/28021AA Sunflower

009779-00136 034704-00002 034704-00009 034704-00085

/14018AA Sweet Potato

000279-01368 000524-00091 000524-00130 000524-00132
000524-00138 000524-00139 000524-00140 000524-00141
000524-00266 000524-00290 000524-00340 000682-00062
000769-00442 000876-00074 000876-00078 000876-00079
001439-00164 001526-00208 001526-00496 005905-00082
005905-00086 006735-00100 006735-00113 007001-00052
007401-00156 007401-00297 008773-00005 009779-00026
009779-00136 009779-00205 011682-00027 014775-00012

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Appendix B

Listing of Registration Numbers By Site (continued)

Sweet Potato (continued)

014775-00013 014775-00030 014775-00036 019713-00100
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089 035222-00003 045115-00041

/13025AA **Swiss Chard**

000279-01251 000279-01611 000400-00202 000400-00210
000400-00215 000524-00091 000524-00130 000524-00132
000524-00340 000769-00093 000769-00150 001202-00252
001202-00265 001526-00496 005905-00082 005905-00086
005905-00187 005905-00255 006735-00100 006735-00113
007401-00156 007401-00297 011682-00027 014775-00013
014775-00030 019713-00038 034704-00002 034704-00009
034704-00085 034704-00088 034704-00142

/26003DA **Tobacco (to be transplanted)**

000279-00337 000279-00702 000279-01251 000279-01611
000400-00202 000400-00210 000476-00206 000476-00215
000769-00077 000769-00093 000769-00150 000769-00442
000829-00062 001598-00038 001812-00105 002124-00085
002269-00169 003342-00071 003743-00001 003743-00253
004185-00149 005481-00151 005549-00024 005905-00408
009859-00127 034704-00142 034704-00178 042463-00039
045115-00041

/26003AA **Tobacco**

000072-00314 000279-00336 000279-00337 000279-00702
000279-01019 000279-01251 000279-01611 000279-02204
000400-00210 000476-00206 000476-00215 000524-00091
000524-00130 000524-00132 000524-00138 000524-00139
000524-00140 000524-00141 000524-00266 000524-00290
000524-00340 000769-00077 000769-00093 000769-00150
000769-00291 000769-00442 000829-00062 000876-00074
000876-00078 000876-00079 001439-00143 001439-00164
001526-00496 001598-00038 001812-00099 001812-00105
001812-00136 001842-00010 002124-00085 002269-00100
002269-00169 003342-00071 003743-00001 003743-00175
003743-00253 003743-00266 003743-00278 004185-00120
004185-00149 004185-00401 005481-00151 005549-00027
005797-00048 005797-00094 005905-00082 005905-00086
005905-00255 005905-00295 005905-00351 005905-00408
006735-00100 006735-00113 007001-00055 007401-00156
007401-00297 009779-00026 009779-00136 009779-00202
009779-00205 009859-00127 009859-00131 009859-00137
009859-00140 009859-00153 009859-00214 009859-00260
011656-00015 011682-00027 014775-00012 014775-00013
014775-00030 019713-00038 019713-00100 034704-00002
034704-00009 034704-00056 034704-00085 034704-00142

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PARATHION

Appendix B

Listing of Registration Numbers By Site (continued)

Tobacco (continued)

035222-00003 037686-00028 040831-00061 042463-00003
042463-00006 042463-00039 044317-00033 045115-00041

/11005AA Tomato

000072-00314 000239-01268 000264-00359 000279-00336
000279-00337 000279-00447 000279-00464 000279-00702
000279-01019 000279-01251 000279-01611 000279-01957
000279-02069 000279-02204 000400-00202 000400-00210
000400-00215 000476-00206 000476-00215 000476-00603
000476-00946 000476-01430 000476-01441 000524-00091
000524-00130 000524-00132 000524-00138 000524-00139
000524-00140 000524-00141 000524-00266 000524-00290
000524-00340 000551-00152 000595-00302 000682-00038
000682-00039 000682-00040 000682-00041 000682-00052
000682-00062 000769-00077 000769-00093 000769-00150
000769-00291 000802-00166 000802-00412 000829-00166
000876-00074 000876-00078 000876-00079 000904-00258
000904-00260 000904-00269 000904-00270 000904-00275
001202-00166 001202-00252 001202-00265 001258-01040
001339-00127 001439-00129 001439-00143 001526-00208
001526-00496 001598-00038 001842-00010 001990-00404
001990-00438 002124-00085 002124-00146 002124-00551
002124-00606 002124-00743 002217-00361 002217-00467
002269-00100 002393-00214 002393-00242 002393-00272
002393-00356 002935-00038 002935-00138 002935-00329
003468-00037 003743-00001 003743-00197 003743-00266
003743-00278 004185-00149 004185-00152 004185-00320
004185-00401 005481-00151 005481-00185 005905-00082
005905-00086 005905-00187 005905-00210 005905-00255
005905-00292 005905-00295 005905-00334 005905-00408
006735-00029 006735-00100 006735-00113 006937-00013
007001-00005 007001-00052 007001-00055 007401-00156
007401-00297 007467-00057 008590-00110 008590-00201
008590-00204 009618-00005 009779-00026 009779-00136
009779-00202 009779-00205 009859-00112 009859-00127
009859-00131 009859-00137 009859-00140 009859-00214
009859-00260 010163-00001 010163-00052 010163-00054
010163-00062 011656-00014 011656-00015 011656-00062
011682-00027 012130-00027 014775-00012 014775-00013
014775-00030 014775-00036 019713-00038 033722-00004
034704-00002 034704-00009 034704-00056 034704-00085
034704-00089 034704-00175 034704-00178 035222-00003
040831-00002 040831-00017 040831-00061 042057-00010
042057-00018 042057-00037 042057-00054 044215-00016
044317-00019

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Appendix B

Listing of Registration Numbers By Site (continued)

/28022AA Turnips

000072-00314 000264-00359 000279-00336 000279-00337
000279-00447 000279-00702 000279-01019 000279-01251
000279-01611 000279-01957 000279-02069 000400-00210
000400-00215 000400-00347 000476-00206 000476-00230
000476-00946 000476-01430 000476-01441 000524-00091
000524-00130 000524-00132 000524-00138 000524-00139
000524-00140 000524-00141 000524-00266 000524-00290
000524-00340 000595-00302 000682-00062 000769-00077
000769-00093 000769-00150 000769-00291 000802-00166
000802-00412 000829-00062 000829-00166 000876-00074
000876-00078 000876-00079 000904-00258 000904-00260
000904-00275 001202-00252 001339-00127 001439-00129
001439-00143 001526-00496 001598-00038 001842-00010
002124-00606 002217-00361 002269-00169 002393-00242
002393-00272 002393-00356 002935-00138 002935-00329
003468-00037 003743-00197 003743-00266 004185-00320
004185-00401 005481-00151 005481-00185 005905-00082
005905-00086 005905-00187 005905-00255 005905-00334
005905-00408 006735-00100 006735-00113 007001-00055
007401-00156 007401-00297 007467-00057 008590-00049
008590-00201 008590-00204 008773-00005 009779-00205
009859-00112 009859-00127 010163-00052 010163-00054
011656-00014 011656-00015 011656-00062 011682-00027
012130-00027 014775-00012 014775-00013 014775-00030
014775-00036 019713-00038 019713-00100 033722-00004
034704-00002 034704-00009 034704-00085 034704-00088
034704-00089 034704-00142 034704-00175 035222-00003
037686-00044 040831-00002 040831-00017 042057-00003
042057-00054 044317-00019 044317-00032 045115-00041

/23010AA Vetch (including Vetch (Seed Crop))
/23010BA

000072-00314 000264-00359 000279-01251 000279-01611
000400-00202 000400-00210 000400-00347 000476-00206
000476-00215 000476-00230 000476-00603 000476-00946
000476-01430 000476-01441 000524-00091 000524-00130
000524-00132 000524-00340 000551-00152 000682-00020
000682-00038 000682-00040 000682-00041 000682-00042
000682-00052 000769-00093 000769-00150 000769-00291
000802-00166 000802-00412 000876-00074 000876-00078
000876-00079 000904-00287 001208-00035 001258-01040
001339-00127 001526-00496 001842-00053 001842-00105
002124-00606 002217-00361 002217-00467 002393-00214
002393-00242 002393-00272 002393-00356 002935-00038
002935-00138 002935-00329 003468-00037 003743-00001
003743-00197 003743-00278 004185-00149 004185-00152
004185-00320 004185-00401 005481-00151 005481-00185
005905-00082 005905-00086 005905-00210 005905-00334

Listing of Registration Numbers By Site (continued)

Vetch (including Vetch (Seed Crop)) (continued)

005905-00408 006735-00029 006735-00100 006735-00113
007001-00005 007401-00156 007401-00297 008590-00201
008590-00204 008773-00005 009779-00026 009779-00136
009859-00112 010163-00001 010163-00052 010163-00054
010163-00062 011656-00014 011656-00015 011656-00062
011682-00027 014775-00013 014775-00030 019713-00038
033722-00004 034704-00002 034704-00009 034704-00085
034704-00175 040831-00002 040831-00043 042057-00003
042057-00036 042057-00095 044215-00016 044317-00019
044317-00033

/03009AA Walnut

000279-00447 000279-01251 000279-01611 000400-00210
000400-00215 000476-00215 000476-00230 000476-00603
000476-00946 000476-01441 000524-00091 000524-00130
000524-00132 000524-00340 000802-00412 001202-00166
001202-00251 001202-00252 001202-00265 001439-00129
001526-00496 002393-00356 002935-00038 004185-00149
004185-00152 004581-00179 005481-00185 005905-00082
005905-00086 005905-00255 007001-00005 007001-00052
007001-00055 007401-00156 007401-00297 010163-00052
010163-00054 010163-00062 011656-00062 011682-00027
014775-00013 014775-00030 034704-00002 034704-00009
034704-00056 034704-00085 034704-00088 034704-00089
034704-00090 040831-00017 040831-00061

/28065AA Wheat

000072-00314 000264-00359 000279-00464 000279-00909
000279-01251 000279-01611 000400-00202 000400-00210
000400-00347 000476-00206 000476-00215 000476-00230
000476-00603 000476-00946 000476-01430 000476-01441
000524-00091 000524-00130 000524-00132 000524-00340
000551-00152 000551-00170 000682-00020 000682-00038
000682-00040 000682-00041 000682-00042 000682-00052
000682-00062 000769-00093 000769-00150 000769-00291
000802-00166 000802-00412 000876-00074 000876-00078
000876-00079 000904-00287 001202-00251 001208-00035
001258-01040 001339-00127 001439-00143 001526-00496
001842-00053 001842-00105 001990-00404 001990-00438
002124-00424 002124-00606 002217-00361 002217-00467
002217-00472 002393-00214 002393-00242 002393-00272
002393-00356 002737-00009 002737-00028 002935-00038
002935-00329 003468-00037 003743-00001 003743-00197
003743-00278 004185-00149 004185-00152 004185-00320
004185-00401 005481-00151 005481-00185 005905-00082
005905-00086 005905-00210 005905-00255 005905-00334
005905-00408 006735-00029 006735-00100

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Appendix B

Listing of Registration Numbers By Site (continued)

Wheat (continued)

006735-00113 007001-00055 007401-00156 007401-00297
008590-00201 008590-00204 008773-00005 009768-00023
009779-00026 009779-00136 009859-00112 010163-00001
010163-00052 010163-00054 010163-00062 010226-00006
011656-00014 011656-00015 011656-00062 011682-00027
012130-00027 014775-00013 014775-00030 019713-00038
033722-00004 034704-00002 034704-00009 034704-00056
034704-00085 034704-00088 034704-00089 034704-00175
040831-00002 040831-00007 040831-00043 042057-00003
042057-00010 042057-00018 042057-00036 042057-00037
042057-00095 044215-00016 044317-00019 044317-00033

ORNAMENTALS

(Ornamental Plants (herbaceous, woody shrubs, trees and vines))

/31003AA Ornamental Flowering Plants (including Gladiolus)

000476-01641 001439-00143 001439-00164 005905-00295

/32000AA
/32000DA Ornamental Plants (including nursery stock)

000279-00337 000279-00702 000279-01251 000279-01368
000279-01611 000279-01957 000279-02069 000279-02204
000400-00210 000400-00215 000682-00040 000682-00041
000682-00052 000769-00077 000769-00093 000769-00150
001202-00252 001439-00143 001526-00496 002269-00100
005481-00151 005905-00082 005905-00086 005905-00187
005905-00255 008934-00059 011656-00015 035222-00003
040831-00017 042057-00037 042057-00054

(Ornamental and Forest Greenhouse Plants)

/32000CA Ornamental Plants (greenhouse)

001327-00011 001327-00013

FOREST, CHAPARRAL, NONAGRICULTURAL AND WASTELANDS

/30005AA Christmas Tree Plantations

000524-00091 000524-00130 000524-00132 000524-00340
001526-00496 007401-00156 007401-00297 011682-00027
014775-00013 014775-00030 034704-00002 034704-00009
034704-00085

Listing of Registration Numbers By Site (continued)

URBAN AND RURAL/INDOOR OUTDOOR AREAS (PUBLIC HEALTH)

/680000A Mosquito Abatement Districts (including irrigation ditches)

000279-00909 000279-01611 000279-01906 000279-01957
005481-00099 005481-00127 005905-00109

GUIDE TO USE OF THIS BIBLIOGRAPHY

1. CONTENT OF BIBLIOGRAPHY. This bibliography contains citations of all studies considered relevant by EPA in arriving at the positions and conclusions stated elsewhere in the Standard. Primary sources for studies in this bibliography have been the body of data submitted to EPA and its predecessor agencies in support of past regulatory decisions. Selections from other sources including the published literature, in those instances where they have been considered, will be included.

2. UNITS OF ENTRY. The unit of entry in this bibliography is called a "study." In the case of published materials, this corresponds closely to an article. In the case of unpublished materials submitted to the Agency, the Agency has sought to identify documents at a level parallel to the published article from within the typically larger volumes in which they were submitted. The resulting "studies" generally have a distinct title (or at least a single subject), can stand alone for purposes of review, and can be described with a conventional bibliographic citation. The Agency has attempted also to unite basic documents and commentaries upon them, treating them as a single study.

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  (1) Submission Date. The date of the earliest known submission appears immediately following the word "received."

  (2) Administrative Number. The next element, immediately following the word "under," is the registration number, experimental use permit number, petition number, or other administrative number associated with the earliest known submission.

  (3) Submitter. The third element is the submitter, following the phrase "submitted by." When authorship is defaulted to the submitter, this element is omitted.

  (4) Volume Identification (Accession Numbers). The final element in the trailing parentheses identifies the EPA accession number of the volume in which the original submission of the study appears. The six-digit accession number follows the symbol "CDL," standing for "Company Data Library." This accession number is in turn followed by an alphabetic suffix which shows the relative position of the study within the volume. For example, within accession number 123456, the first study would be 123456-A; the second, 123456-B; the 26th, 123456-Z; and the 27th, 123456-AA.

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